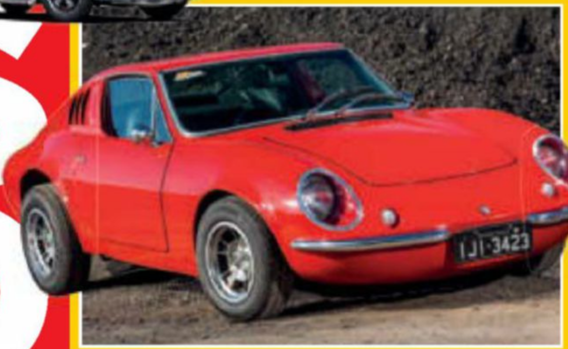
Patina '60 Split
Mango without flash

DKP Cal Looker
Ron Fleming's ragtop

VOLKS WORLD



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VolksWorld

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NEWS

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WELCOME TO THE MAG

Due to the vagaries of how magazines are put together and when they go on sale, you're always a bit behind what's going on in our real lives. Hence, if this month's project piece is to be believed, my '60 is still off the road. If I bring you up to real time, however, you'll discover my car has actually been on the road, and then come off again. The reason? Well, it's just too damn low. And it's not even what most people these days would call really low either!

What happened is my car was dialled in to the height I wanted and that looked cool, and was fine to drive one up, with a bit of fuel. But chuck a full tank and a passenger into the equation and things take a turn for the horrendous.

Maybe I'm just too old, but I just don't see the fun in driving anything that makes you grimace every time you see a dip in the road. Not even a bump mind, but a dip that you know will make your car hit the ground – hard!

I know a lot of people will disagree, but a ride height that causes damage to your car is just too frickin' low. And, quite simply, is not for me. As undeniably cool as it looks, there's no point in me having a car I can't, or don't want to, drive, so it's got to come up a touch.

What I can't understand is how anyone can drive a car that's *lower* than mine. It must hit *everything*, and be doing their framehead / 'pan a world of damage. Just 10 miles in my car resulted in a bent skid plate (bought to protect the framehead and bottom adjuster) and one damaged jacking point. It's horses for courses, but to my mind deliberately wrecking your car for the sake of looking cool is just pony. ■

James Peene
Group editor

Just Kampers Open Day 2016

The 9th annual Just Kampers Open Day is taking place on June 11 at JK HQ in Odiham, Hampshire.

This year's event will see the ever-popular JK charity BBQ back, where burgers and cans of drink are available for a small donation. There will also be a hands-on camping display, where you can see and handle JK's extensive range of camping products and discuss them with the knowledgeable staff. The team from Just Kampers Insurance will be on hand all weekend, showing you how much you could save on your car insurance, and showing off the beautiful red VW Variant JK are giving away in their latest competition.

There'll be plenty of other things to see and do as well, including displays from Dynamat, Cadac (with a cooking demonstration) and Vango awnings.

Farnborough VW will be on hand offering free vehicle health checks and, should they find anything untoward going on, you'll be in the right place to buy the parts required to put it right.

We'll have a stand there too, so come say hello.

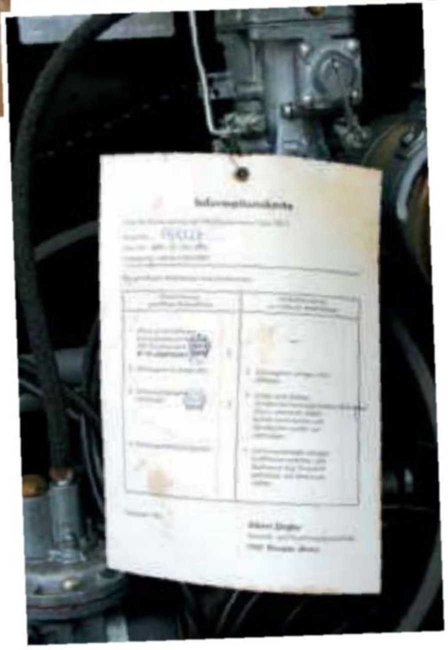
Best of all, though, 100% of the £25 camping fee (which covers one Bus, or a tent and four people from Friday 10 to Sunday 12 June) and all funds raised by the charity BBQ will go direct to this year's chosen charity, Cancer Research UK.

There is no charge for day visitors, and fresh water, toilets and showers are provided.

Discovered

From aeroplanes to Snow-tracs and everything in between, Volkswagen's venerable air-cooled flat four has been used to power all manner of weird and wonderful things over the years. And, when the factory was producing them, they were also sold as stationary engines to power generators and water pumps for the emergency services and the like. Such engines crop up for sale from time to time, and are usually snapped up quickly due to their lack of serious use. However, zero mile NOS examples in their original packing crates, like the one shown here, are infinitely rarer beasts.

At the time of going to press, this time capsule of a 30-horse industrial engine was for sale on thesamba.com and, bar the missing distributor, it's all there. It's even still wrapped in the wax paper it left the factory with and has never even been out of its crate. The seller is asking for a very reasonable £3,950.



...or your money back

Is there actually money to be made restoring old Volkswagens these days?

All of these cars are superb examples, but you stand more chance of seeing your money back on, or even making a bit, with the stockers on the left than you do with the modified cars below

Why did you get into Volkswagens in the first place? Because your mates had them? Because you could afford to buy one? Because of the shows and events that revolve around them? Because they were simple to work on? Whatever the reason, I wager it wasn't to make money. Ignoring the unscrupulous few who pulled a lot of people's trousers down in the Beetle boom of the mid-'90s, few people ever got into air-cooled Volkswagens to make money. Running a business with them at its heart is a different matter, of course, and not what I'm talking about here. I think it's fair to say the vast majority of us got into VWs simply because we like them and we enjoy everything that goes along with them. Going to shows isn't just about appreciating the cars, it's about meeting up with friends and having a laugh. I've been to enough non-VW events in my time to know this isn't the case across all other specialist car scenes.

Spending time and money on old VWs has, traditionally, been a hiding to nothing. You snagged a rusty old Beetle for a couple of grand – maybe if you're lucky a few hundred quid – and by the time you bought all the panels needed to restore it, welded them in, prepped and painted it, re-did the interior, lowered it, bought a set of wheels and did something in the engine bay, you might have chosen to sell it. For less than you spent on it. But you know what, it didn't matter. Provided you'd enjoyed the experience of putting your own mark on it and it had transported you to a couple of Bug Jams / Runs To The Sun / Stanford Halls where you'd got blasted with your mates it was money well spent. Besides, you were going to buy a better one, or an earlier one, or a quicker one, right?

These days, though, the tables appar to have turned. It was put to me the other day by one of my learned colleagues here that we're at the tipping point where you can actually expect to get back what you put into a restoration. And the comment wasn't based on any mythical tales or spurious auction anomalies. Another told me the price of Split Buses has reached a plateau and is starting to level off. He added the caveat, 'unless they're Sambas or Barndoors', which led us down another avenue of discussion about the prices being bandied about in relation to the latter. I accept I'm not 'a Bus guy', and never will be, but the whole Barndoor thing is outside my scope of understanding. When I hear talk of people paying more than I have ever spent on a car on just a section of roof for a Bus, I'm out, I just don't get it. I understand the concept of supply and demand, I concede scarcity can increase the value of something, but the figures I'm hearing are just plain nuts. But they do go some way toward illustrating the point that there does now appear to be money to be made restoring old Volkswagens.

> "It's very hard to build a modified car that will have universal appeal"

What do you think? Do you agree with the ex-ginger Oracle, or do you think he's talking twaddle? Join the debate by emailing us at volksworld.ed@kelsey.co.uk

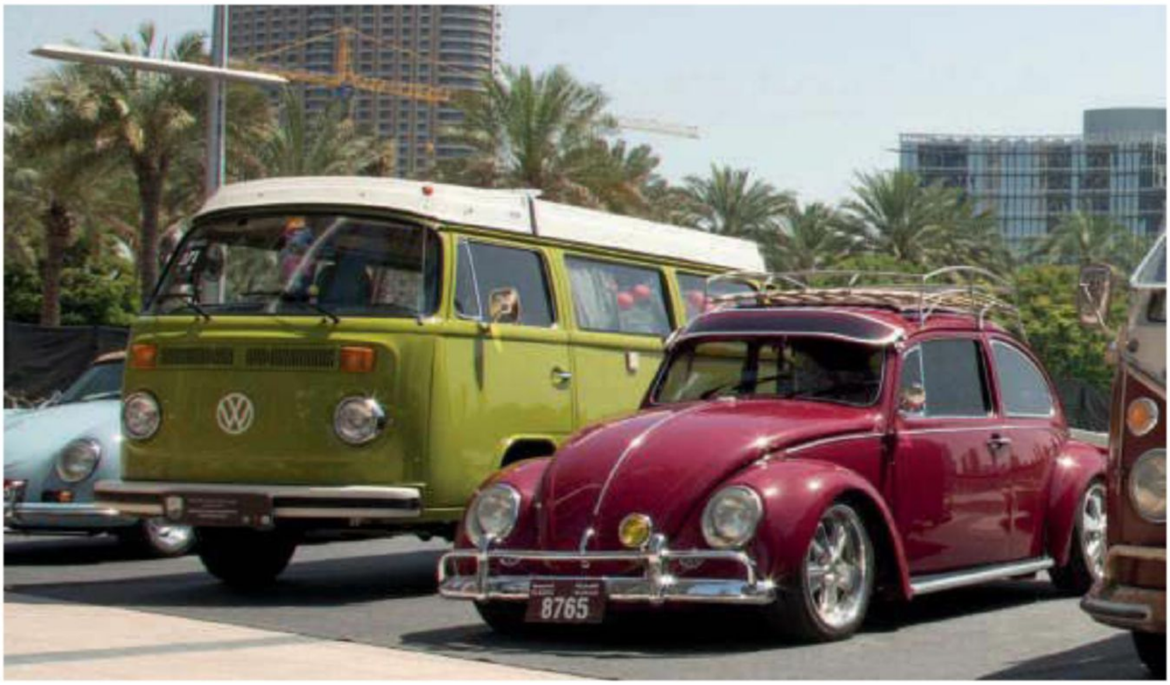
Universal appeal

Provided they're not wildly modified. Such cars are a passion, something you want to do, something you spend untold hours of your life creating for yourself, and your own enjoyment. It's very hard to build a modified car that will have universal appeal in the way a stock restoration does as everybody has different tastes. We've all played the what car would you take home game, or looked at cars for sale, and concluded the conversation with the same comment: 'All I'd do is change the wheels, raise it or lower it a bit more or less, ditch the Uncle Alberts / roofrack / turbo muffler…'

Read the feature in this issue on Ron Fleming's Cal Looker. If ever there was someone who knows his mind when it comes to a Cal Look Beetle Ron is it, yet after over two years of looking for the perfect car, in the very heartland of California Look, he bought a finished car, only to then change the brakes, the shifter, have bits of it repainted and rebuild the engine in a different spec. That's just human nature.

Back to the point though, can you now buy a Beetle, restore it (properly) and sell it for more money than you have invested? I'm still not entirely convinced. I think if you keep everything stock, other than perhaps the ride height and wheels, and do the vast majority of work yourself, then maybe yes. The minute you start paying professionals, or get into building engines, particularly anything performance orientated, you're very unlikely to see that money back. Going back to Ron Fleming's example. The car he bought was initially put up for sale for $26,500 – which I can assure you will have been a far cry from what his car cost to have professionally built – but Ron ended up buying it for a shade over half of that. Or, to put it another way, approximately what it would cost you to have the engine and gearbox that is in that car built here in the UK. In short, someone lost a big chunk of change on that car. Happy days for Ron.

The Bus market these days is different, of course, with higher re-sale values across the board making restoration a more viable proposition, provided you don't go mad on every trinket under the sun and a 'bespoke' solid oak interior. Where the whole thing becomes skewed is in the current patina craze. I've seen cars I consider in need of full restoration up for sale for more than I think the same car is worth fully restored. I guess that's just the power of scene appeal. ■



Max Morley's Late Bay Westy towers over a Resto Cal Bug on 17-inch Fuchs-alikes

Emirates Classic Car Festival

Sun, sea, sand and VWs, just a little bit hotter…

Words and photos Dave Saunders

Classic VWs are making their mark in the unlikely venue of downtown Dubai. In March this year, the 8th annual Emirates Classic Car Festival attracted over 400 vehicles, displayed along the elegant boulevard at the foot of the 829m Burj Khalifa, the world's tallest building.

The event is organised by global development company, Emaar Properties, in association with the Automobile Touring Club of the UAE (ATCUAE), a member of The *Fédération Internationale des Véhicules Anciens* (FIVA). This year's festival attracted FIVA President, Patrick Rollet, as a judge, who commented: "Dubai is a good venue, and this is one of the good shows on the world stage. Each car has an interesting anecdote and this is a way to educate the public."

> "'Cool' here generally involves the latest, fastest and most expensive"

"Many people here [in the UAE] are collectors, but their cars have been hidden away in garages," says event judge and FIA observer, Suhail Marar. "When the festival was launched in 2009 it provided the first opportunity to show their vehicles and raise public awareness and appreciation of classic cars."

Dubai is a futuristic city where the latest Lambo and fastest Ferrari are commonplace. Even police cars are Ferraris and gullwing Mercedes, but it's classic cars that turn heads. People look to Europe and America to buy their vintage cars and there are several garages now specialising in restoring classics, with air-cooled Volkswagens a popular choice.

At the festival's gala reception, the DJ operated from a customised Split Screen Bus with a flip-top roof. In the boulevard line up, a '57 Single Cab was converted into a *majlis*, or lounge, complete with sumptuous cushions and a shisha pipe.

"Originality is not so important here at the moment. That level of sophistication will come," says Florian Zimmermann, one-time head of Mercedes-Benz Classics Centre in Stuttgart. "This show has been a major catalyst in the rise of interest in classic cars in the UAE."

"Our cars are generally seen as oddities here in Dubai, and people take pictures as we drive by," says Englishman, Max Morley, of Audi Volkswagen Middle East. "The idea that they are cool hasn't sunk in yet but, as more and more expats arrive, the appeal of a classic Volkswagen is increasingly being understood locally. 'Cool' here generally involves the latest, fastest and most expensive."

Now that's a backdrop. At 829m, the Burj Khalifa is a sight to behold. If you're a fan of futuristic looking architecture, Dubai is a treat. Add in some tasty classic VWs and job's a good'un

Dubai excels in success and excess, but it's a motor city at heart and its inhabitants have a passion for cars, so it's fast becoming the classic car capital of the Middle East. In a town that is forever racing towards the future, the value of old VWs is starting to be recognised.

Let us know about your VW event or club – email volksworld.ed@kelsey.co.uk

Sea Blue and Cumulus White 21-window looks like a gem. No worries about leaking safari windows in Dubai. If anything you want them shut to keep the 40°C ambient air out!

This '57 Single Cab Pick-Up had been converted into a mobile lounge, complete with shisha pipe

In a city where white is king, red is a surprisingly popular colour, as evidenced by this line up

Convertible Ghia seems perfect, but in reality it's too hot to drive with the hood down

Uh oh, patina alert! Dubai doesn't do old, so this unrestored 13-window Split must really confuse the locals

Flip-top Split DJ Bus kept the party going

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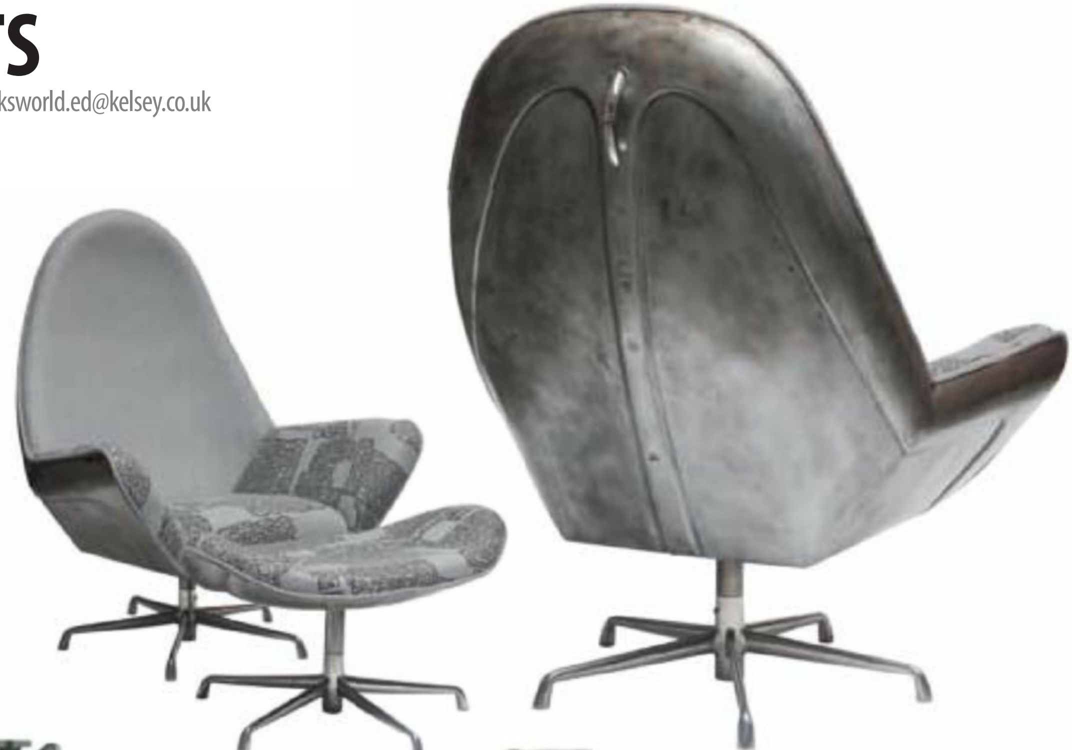


Beetle club chair

From: **www.theragandboneman.co.uk**
Price: **£2,400**

How cool are these club chairs? Mounted on a mid-century swivel base, the outer shell has been fabricated from a Beetle bonnet. They can be colour matched to any RAL number, so you can have one painted to match your car (sort of), if the waxed steel look doesn't tickle your fancy. They also offer a matching footstool made from a Beetle deck lid. Hold tight though because both together will set you back £3,500

Stainless pipe

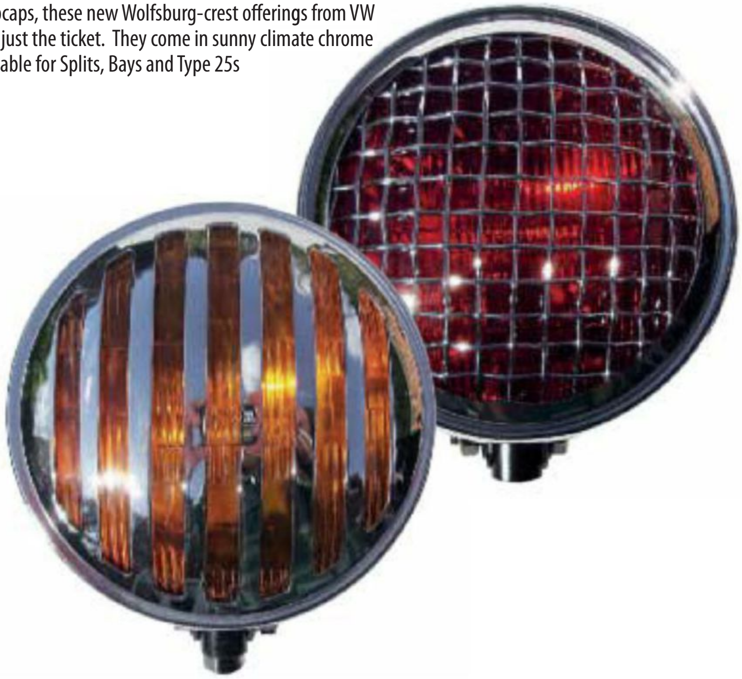
From: **www.machine7.com** **Price:** **£239.49**

Machine 7 is the first company in the UK to offer these new exhausts from German parts specialist Custom & Speed Parts (CSP). Built from 1.4301 stainless steel, CSP has created a new take on an old exhaust. Rather than using the reflection principle the stock Beetle exhaust works on, where sounds and gasses are pushed through separate chambers until the noise is absorbed, these versions use absorption. In doing so, they have managed to achieve a sound level very close to the original exhaust, but with a lot less back pressure. Compatible with standard or aftermarket tailpipes, J-tubes or heat exchangers, and available for both Beetle and Karmann Ghia

Wolfsburg crest hubcaps

From: **www.vwheritage.com** **Price:** **£12.95 each**

If you're looking for something a little different to your regular VW logo hubcaps, these new Wolfsburg-crest offerings from VW Heritage are just the ticket. They come in sunny climate chrome and are available for Splits, Bays and Type 25s



Spot / fog lights

From: **www.aircooledaccessories.com** **Price:** **£59 each / £100 the pair**

Spotlamps are a popular addition to old VWs, but finding a good, useable one at a swapmeet is never easy, especially on your wallet. Good news then that Aircooled Accessories are offering these large, but slim versions. They measure 16cm in diameter and just 8cm in depth. The backs are painted gloss black, while the bezel and grilles are chrome plated. There are a number of versions available, so check the website for more details

All prices include VAT

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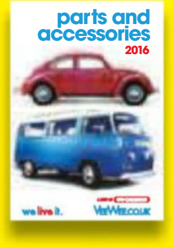

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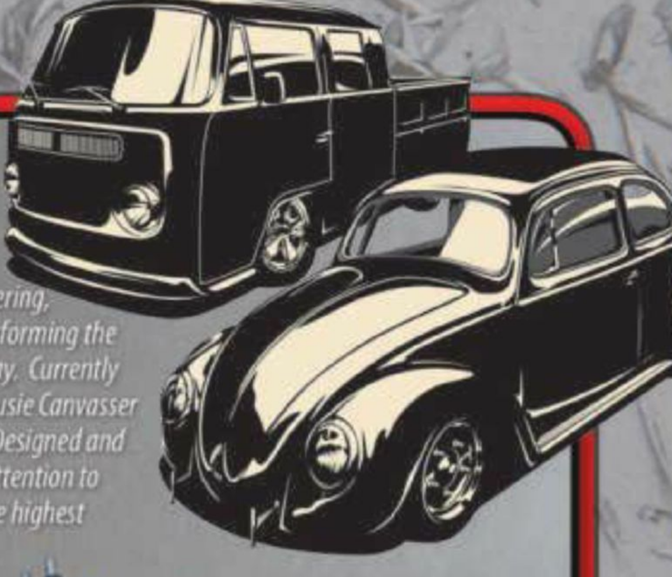

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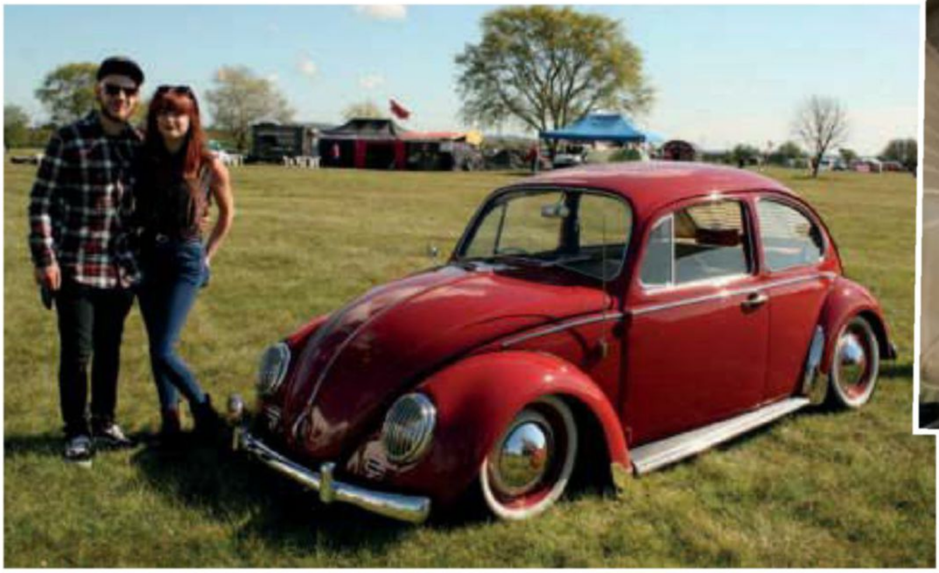
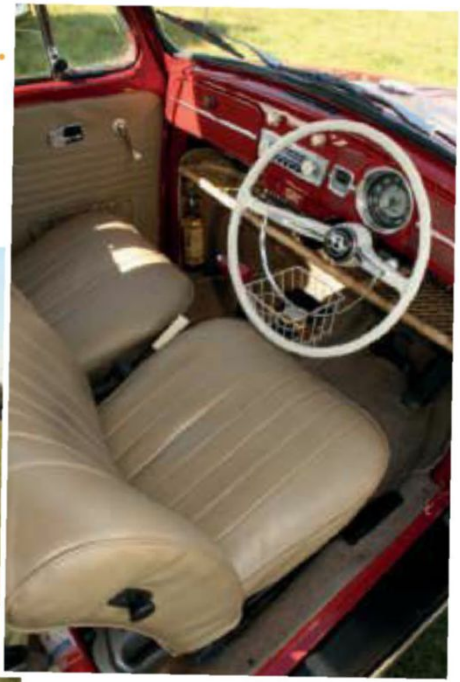




^ There's still a few giveaways in there to the car's real vintage, but you'd have to be a buffer to spot them

< As Prince once said, U Got the Look

Liam Richardson, 1970 Beetle

Liam bought his Beetle in August 2015. Back then it was finished in Mk1 / Mk2 Golf metallic green, but as you can see that has since been changed to a resplendent Kirsch Rot, or Cherry Red, with the car coming out of the paint shop during the last week in April 2016. All the pre-'68 panels were already fitted when he bought it, as was the air ride suspension and biscuit leather-trimmed interior, but Liam took the car's late early look a couple of stages further by welding up the external fuel filler flap and fitting a hinge pin mirror.

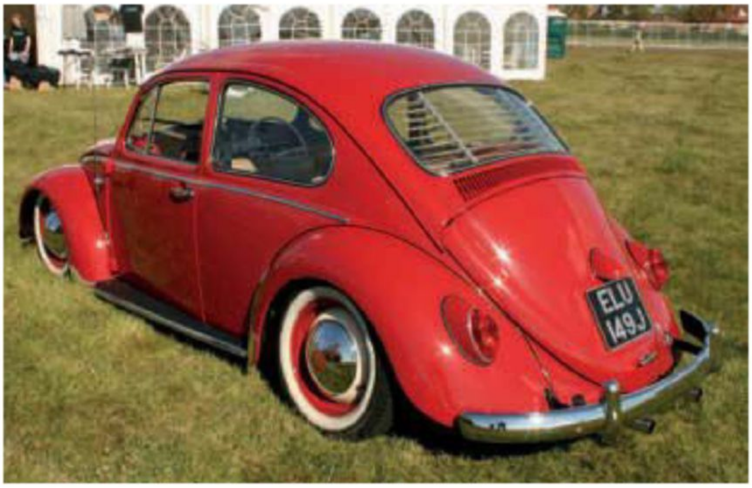
The engine is a 1500cc with matching 'box.

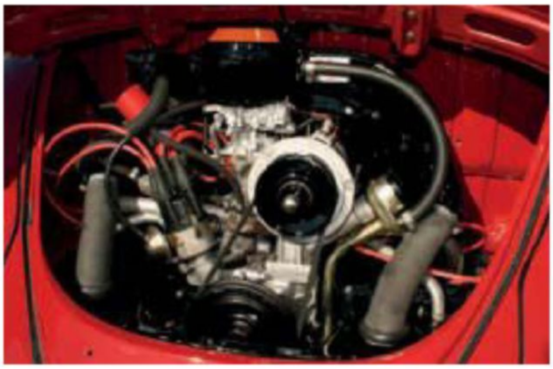
"The finishing touches have included fitting an early Beetle fuel tank as well," explains Liam. "Then I fitted new bumpers and overriders, rubber seals and wing beading. In fact, there's been no expense spared to achieve a really top notch finish and I've completed all of the work myself, except the welding. So I stripped the car down, prepped the bodywork, primed, painted it and spent two days flatting and polishing it."

There was just one fly in the ointment during the Beetle's makeover, as Liam recalls: "I was driving the car out of the bodyshop where I work and the big end in the engine gave up the ghost. I immediately telephoned Just Kampers and they had a reconditioned 1500cc engine sitting on the shelf, which they dispatched on the Friday and I had sitting in the car's engine bay by the end of the day on Saturday." Now that's what we call service!

> "I completed all the work myself, except the welding"

One novel touch on the Beetle that you're unlikely to see on any other is Liam's shots mini bar that he built and installed in the front. "Why just conceal all the wiring with a blank cover, when you can have a special feature," he declares with a grin.





< Whitewall flaps on colour matched two-tone rims really set the style for this sweet Bug. Air ride gives it the look

^ Stock 1500cc motor is a reconditioned unit from Just Kampers. Car is super clean and nicely detailed throughout

Phillip and Nathan Carr, 1975 Beetle

Phillip used to run a 1300 Beetle as a daily driver three years ago, which was replaced by a 2004 Beetle, purely for its modernity and all round user friendliness for his family. However, knowing Phillip's love of old Beetles, his wife suggested adding an older classic model a few years later, which their son, Nathan, could also enjoy, as he was approaching the time to learn to drive. "We'd been hunting around for quite a while, but didn't want anything that had been customised. I've done all that in my youth, but now wanted something as close to stock as possible, especially for Nathan to drive," explains Phillip. "We bought this car, finished in the unusual colour of Alpine Green, in January 2016. Another unusual feature is that it's powered by a 1200cc engine and was built at the Emden factory, where the last of the German Beetles were produced."

While the Beetle previously had a fabric-trimmed interior, this was replaced around two years ago with a beige vinyl trim. The car has covered just 30,000 miles since new and has clearly always been well looked after. In 2015, the car was only driven 50 miles and, prior to that, only 900 miles were put on the clock in 10 years! Phillip believes some restoration work was completed around 2006, including he thinks an exterior repaint and fitment of a new carburettor.

In January this year, some further paintwork touch ups were carried out, and a new set of tyres is next on the list. Phillip and Nathan's first trip out with the car was to the Bedfordshire Classic Motor Show at Turvey House over the May Day weekend. Nathan is due to take up an apprenticeship with a Volkswagen main dealer in September this year, so pretty soon he'll not only be taking to the wheel of the family's classic Beetle, but doing any work needed on it as well!

Interior looks stock, but has actually been re-trimmed in beige vinyl, with custom made door cards

Late 1200 engines like these may not be powerhouses but they get the job done, albeit at a sedate pace

Car is an ex-US (Miami) import, hence the giant safety indicators on the front wings

Steve Rolls, '73 Karmann Cab

Originally built in Germany with red paintwork and a black soft top, black interior and whitewall tyres, Steve Rolls' Beetle was then shipped to Miami, USA, where it remained for much of its life. It was then shipped to the UK in the late 1990s, and in 2000 at Thorpe Bay in Essex underwent a complete metamorphosis, being converted to RHD, repainted in a Volkswagen metallic green, with the interior re-trimmed in beige and a new beige Mohair soft top. A year after all the work was completed, the car was sold and went to live down in Cornwall, from where Steve bought it.

"I'd always wanted a Beetle convertible since watching the film, *Boyz 'n the Hood* in the '90s," Steve explains. "The one in the film was pretty similar to this, but metallic blue not green.

"When I got it it had been sitting outside for a long time, so was very damp inside and the interior was in a right old state, but the bodywork was very sound and just required a thorough clean. The cheap chrome bumpers were very rusty and had to be replaced, though I've since fitted T-bars at the front as the car in the film had. The car is used at every single opportunity, preferably with the soft top down."

For some unknown reason, the 1600cc engine had been fitted with a 1300cc carburettor with an adapter, which was changed for the correct carburettor during a trip to Holland, which Steve says made a huge difference to the performance.

"Future jobs include getting the interior re-trimmed as it's looking a little worn and needs some TLC," reflects Steve. "It will never be a show car as it's always being driven too much, though ultimately one day it will get repainted in exactly the same colour as the car in the film."

Inspired by the car Cuba Gooding Jr. drives in *Boyz 'n the Hood*, Steve plans to have his Cabrio painted metallic blue at some point

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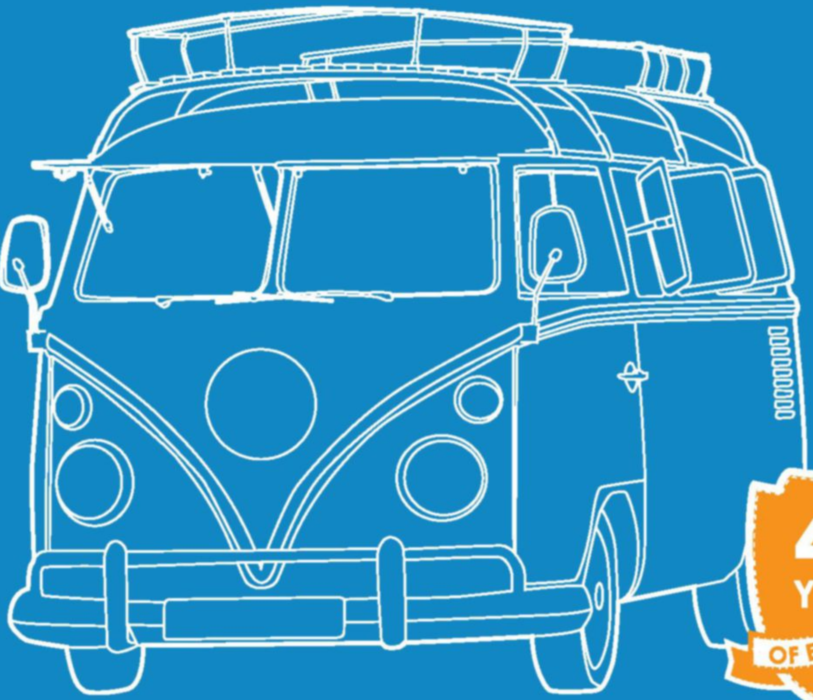

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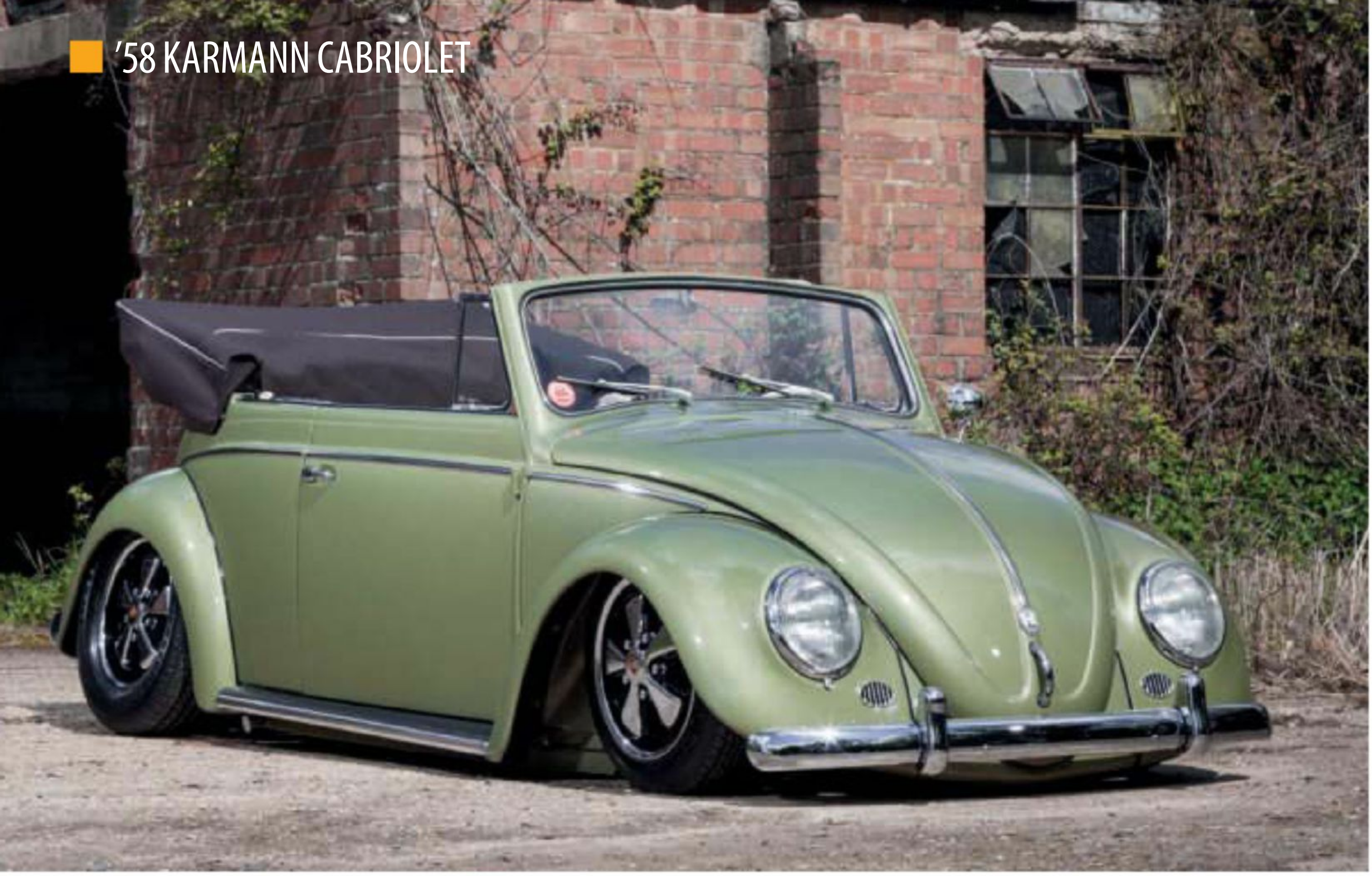
Words Mike Pye **Photos** Steve Sharp



Car's radical stance when parked is achieved with a combination of Airkewld products front and rear, then 125 Firestone F560s and specially imported 215/65 Firestone FR710s on chromed 'n' detailed gennie 4.5 and deep six early Fuchs

If there was one car at The *VolksWorld* Show this year that really got people talking, it was the Almond Green '58 Cabriolet of Steve, sorry, Kelly Lawrie. The presence of the German Folks rear window script might lead you to assume one or two things, but let's get this straight from the start, this car was never built as a show car, just a nice, useable driver for Kelly.

Those blessed with a memory might remember Steve ('Loz' to his mates) from a brown and cream 21-window Samba on 17-inch BRM-alikes that was on the cover of our sister magazine, *Camper&Bus* in the summer of 2010. In that feature, mention was made of a replacement for the Squareback he'd built for Kelly to drive, but which proved to be a touch too low for her liking. Bought in 2009 as a painted roller from Houston, Texas, the Coral Red '58 Cabriolet looked like a good buy. "The colour looked great in the Texas sunshine, but it just looked a bit naff under grey English skies. Plus it was damaged in shipping, so I decided to paint it. But that was it, I was just going to give it a quick colour change and have it on the road for the summer."

> “A quick colour change and have it on the road for the summer”

The car was repainted in its new shade of L316 Almond Green (a '56 model year Cabriolet colour) by Iain Strachan of iKustoms (tel. 07515 148195), back in the days before he had his own workshop, and taken back to Steve and Kelly's garage at home. "I used to go on Restowagen all the time, and people like Foxy, the level of detail they were building cars to, it just made me want to up my game."

TECH INFO

BODY: 1958 Karmann Cabrio, painted in L316 Almond Green

INTERIOR: Full West Coast Classics repro interior with brown hood; Petri Pealit steering wheel

SUSPENSION: Airkewld air bag front beam with modified shock towers; flipped track rods; Airkewld weld-in rear air bag set up; TransporterHaus adjustable spring plates

BRAKES: Porsche pattern front discs; standard drums with adapters

WHEELS AND TYRES: Genuine 4.5 and deep six Fuchs; 125 and 215/65 Firestones

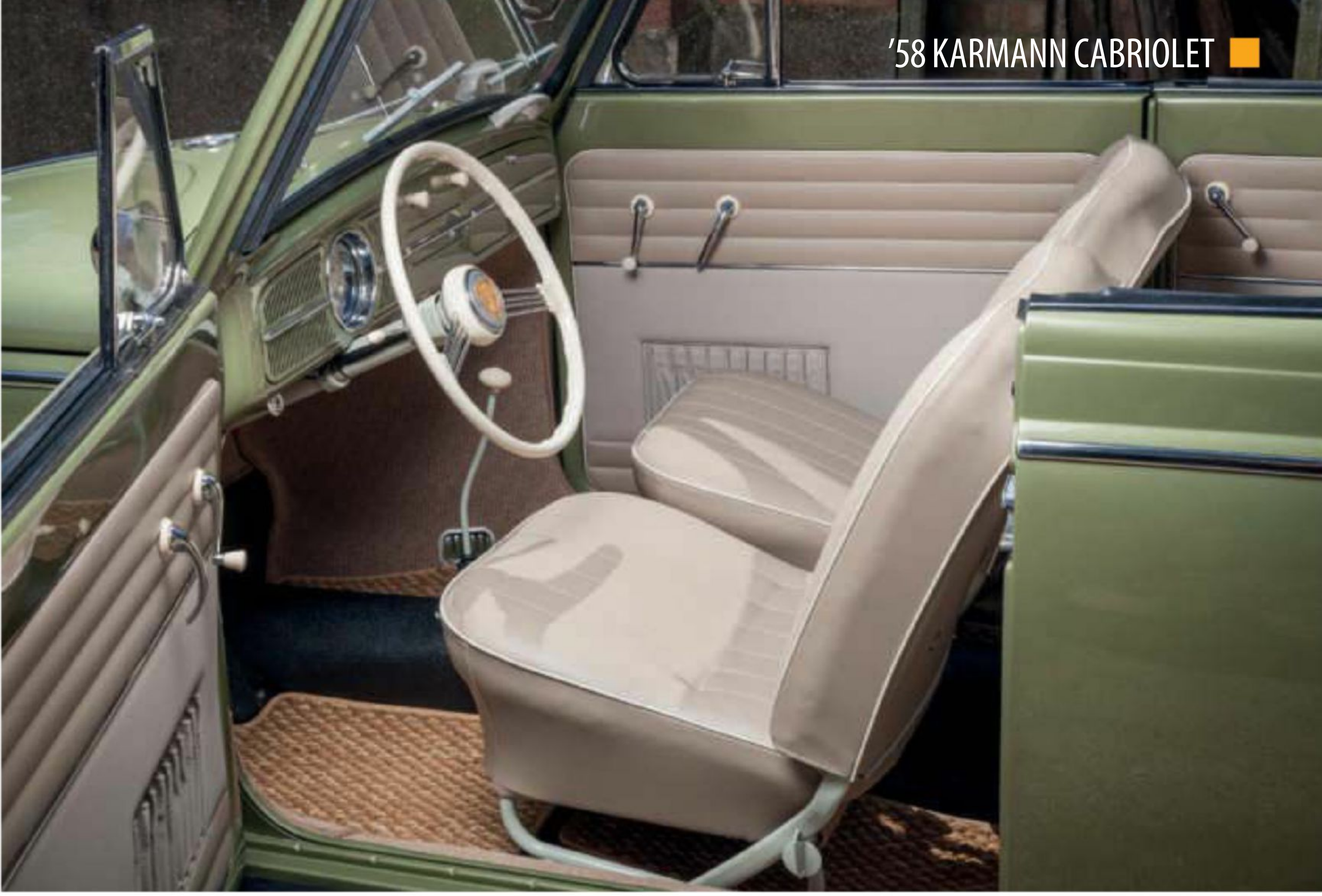
Conversely, that didn't spur Steve on, but rather turned him off for a while. "I had a bit of a mid-life crisis and got back into mountain biking. Then I started looking at motorbikes..."

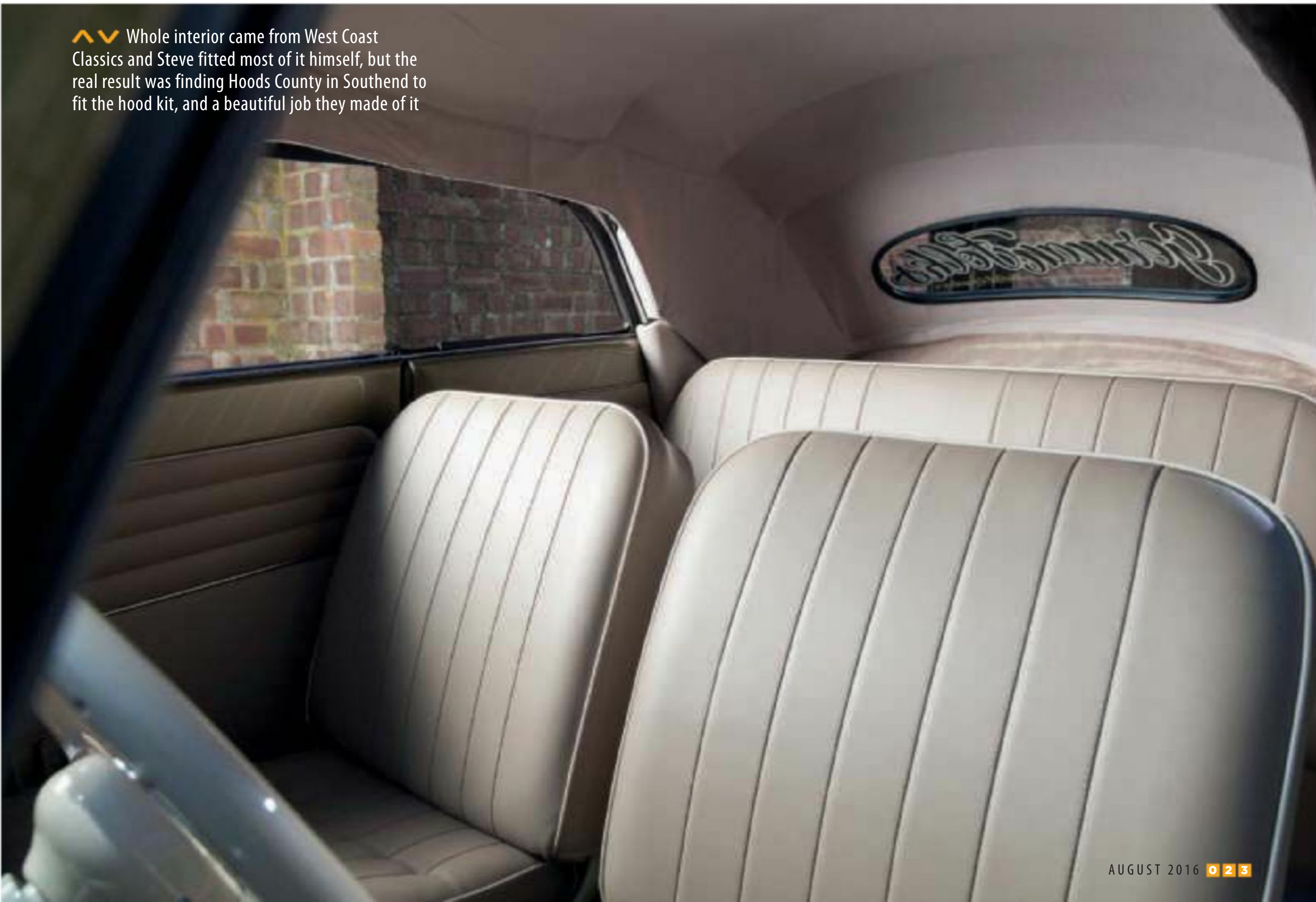
When he started talking about a motorcycle resto project, it was Kelly who brought him back down to earth. "'Ere, what about the project you've already got in the garage? I want that Beetle finished before my 40th birthday [this year, incidentally], or at least before you buy another project!" Or words to that effect.

Kick start

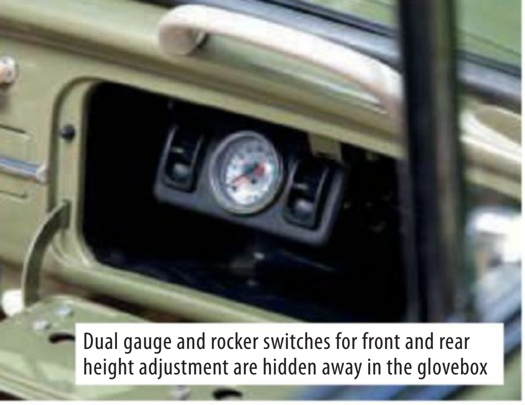
The car had been sitting at this point for a couple of years, a freshly painted body on trestles above a cleaned and painted floorpan. "I decided if I was going to get motivated, I needed to get the 'pan built up. I wanted the car low, but to remain driveable, so it had to be on air ride, and I bought everything I needed from Airkewld in the States. That was the kick start. But taking the 'pan to work was what really did it. When it was at home I could just ignore it, when I was tripping over it in the workshop and staring at it every day, I had to get on with it."

After the weld-in rear crossmember was fitted, the 'pan went back to iKustoms for its second repaint. "There was nothing wrong, Iain had done what I asked, we just got it a little better the second time round," explains Steve. Again, in keeping with the





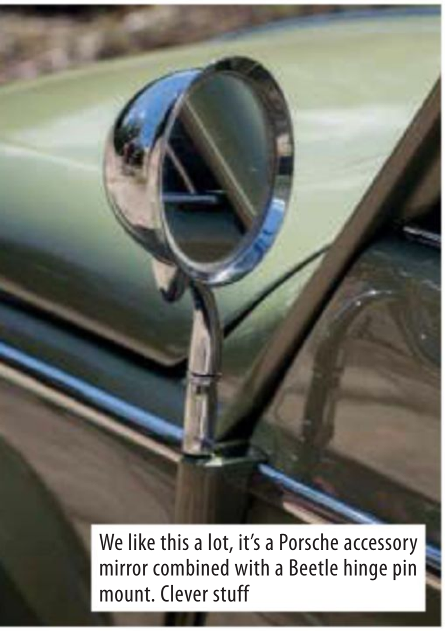
Whole interior came from West Coast Classics and Steve fitted most of it himself, but the real result was finding Hoods County in Southend to fit the hood kit, and a beautiful job they made of it



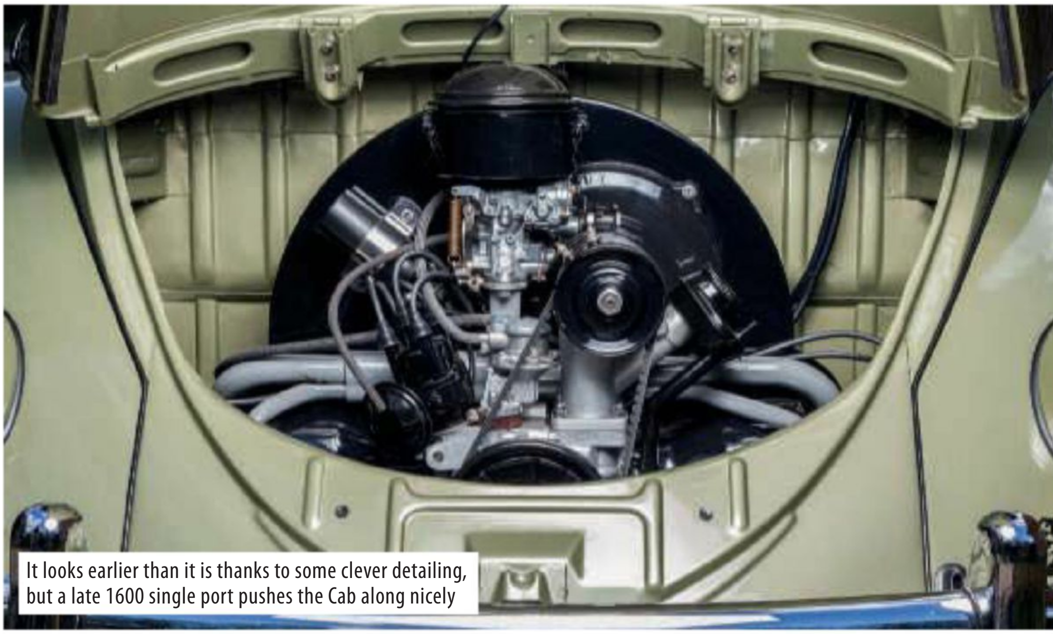
Dual gauge and rocker switches for front and rear height adjustment are hidden away in the glovebox

German Folks

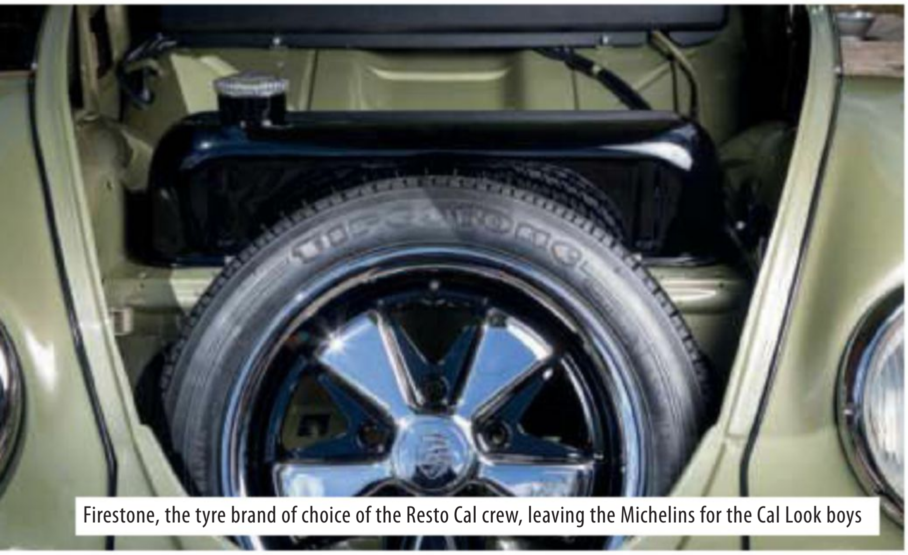
Tuck 'n' roll…



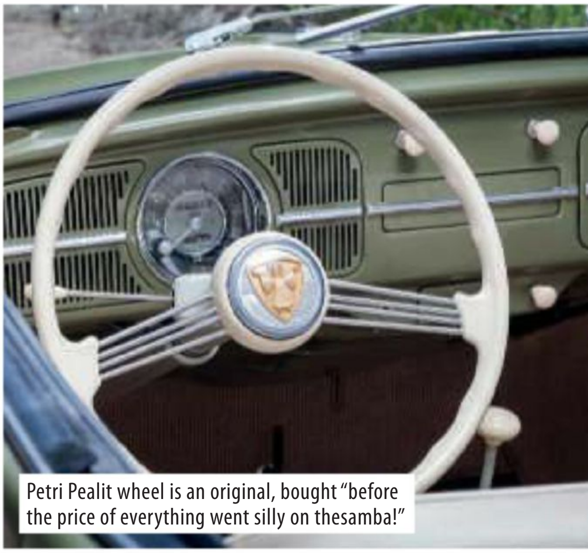
We like this a lot, it's a Porsche accessory mirror combined with a Beetle hinge pin mount. Clever stuff



It looks earlier than it is thanks to some clever detailing, but a late 1600 single port pushes the Cab along nicely

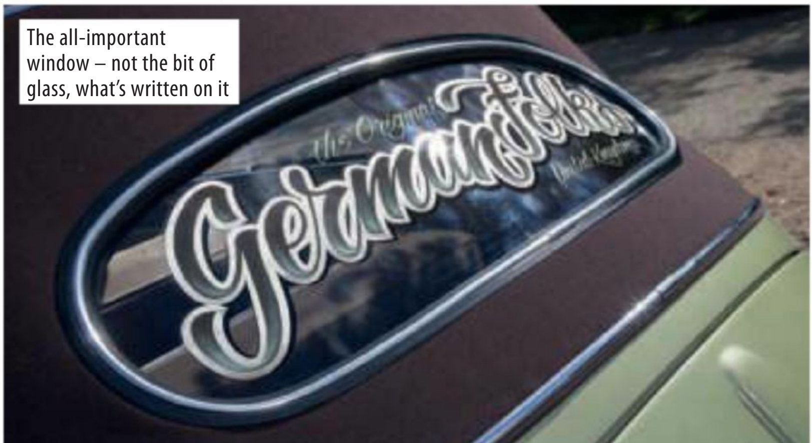


Firestone, the tyre brand of choice of the Resto Cal crew, leaving the Michelins for the Cal Look boys

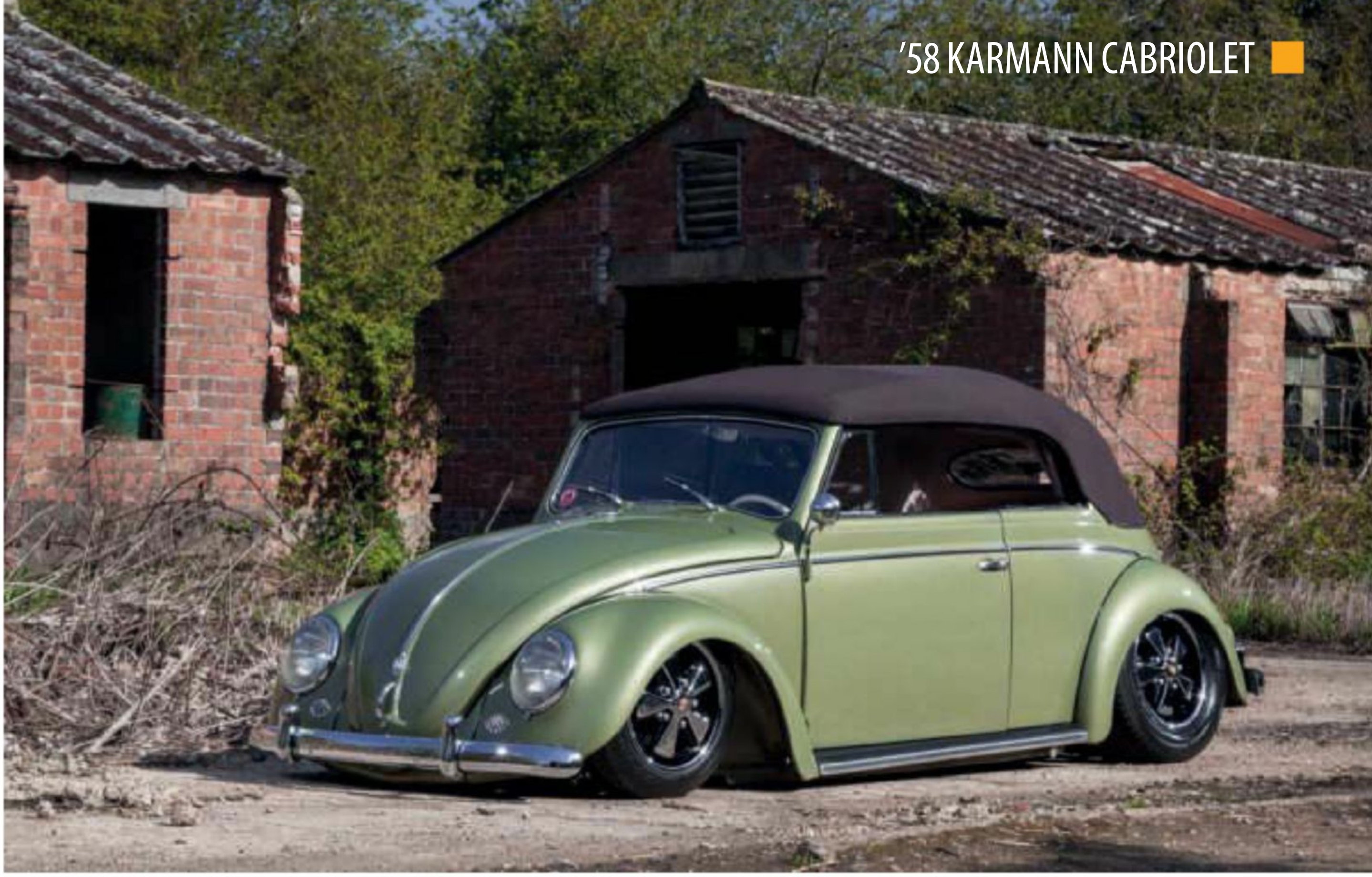


Petri Pealit wheel is an original, bought "before the price of everything went silly on thesamba!"

The colour combinations on this car are just beautiful, thanks in no small part to the experienced eye of Lenny Copp at West Coast Classics in the USA



The all-important window – not the bit of glass, what's written on it



^ You don't buy a Cabrio to drive around with the roof up, but it's a tough call when a car looks this sweet with the hood up. Those colours just work a treat, don't they?

driver ethos, the 'pan was given a light coat of stone chip beneath the gloss black underneath and re-assembled with standard fixings.

"I got it all back together and it was nowhere near low enough," Steve continues, "so I had an engineer cut and extend the shock towers. At some point I'll change it to a custom made beam with leaves in for a bit of added safety factor as I don't really like the through rods that are in it at present."

And talking of suspension, the Airkewld rear kit Steve fitted also dispenses with the rear torsion bars, but again he wasn't happy with that idea so since the show he's fitted some TransporterHaus adjustable spring plates and set it up so the car sits on the stops at full drop, while the air bags raise it to drive.

Single man

Having gone down the stroker engine route with his Bus, Steve was adamant he wasn't doing that again. "I didn't want an engine I was going to be constantly worrying about, so I just rebuilt the top end on the 1600 single port that was originally in my Bus. It's just a brilliant engine. We used to fly up and down the motorway with your foot flat to the floor and it never let us down." Not wanting to give it a performance look, Steve just backdated it with earlier tinware and detailing and it now both looks the part and does the job. "I took a bit of a gamble on the gearbox that was in the car when it came over. It's not the original one but it changed gears and spun freely so, apart from modifying it for a 12V clutch and flywheel, all I've done is paint it. Luckily, it's sweet."

> "The biggest problem I had was I'd never done a Beetle before"

Surprisingly, Steve reports the only things that proved difficult to source were the roof latches. "They took a while and cost me a few quid, then I had to strip them and get them re-chromed, but nothing else was particularly hard to find.

"The biggest problem I had was I'd never done a Beetle before, so I was doing lots of two steps forward, one steps back. Kelly just kept giving me the pep talk and encouraging me, so I'd go back and have another go and I got there in the end."

Finding someone prepared to trim the convertible hood proved harder than you might think, but digging through some old back issues of *VolksWorld* turned up Hoods County in Southend, who did a cracking job for the very reasonable sum of £400, not even complaining when it turned out the headliner Steve had given them was for a Karmann Ghia, not a Beetle. "I'd had it all sitting there for months, but I'd never bothered to check it all," explains Steve. After profuse apologies, a replacement was sent in double quick time from West Coast Classics in the States. In fact, the entire interior came from the same source, bought when Steve and Kelly were on holiday / attending a mate's wedding in California.

Almonds are forever

"I'd seen a car on the internet in Almond Green with a tan hood and I just loved it. I didn't want to copy it though, so we decided to go for a darker hood with a tan interior. After a tour of the workshop we sat down with Lenny and went through all the samples, then just ordered everything in one hit, from the carpets right through to the exterior hood cover. It was the part of the whole car I was most dreading because I'd built it up in my mind as this massive problem and huge cost, but I was pleasantly surprised [around $4,000 for everything, as Steve recalls] and, once it was all in the car, it looks better than we had ever hoped."

And so what of the whole German Folks thing I asked, intrigued by the process by which one becomes a member of the primo Resto Cal club. "I've known some of the guys

in the club for years, and they'd seen the progress of the car, but there was no talk of windows or anything like that. I didn't think the car was good enough. Likewise, people kept saying I should take it to The *VolksWorld* Show, but I didn't think it was good enough for that either. But then I got the 'phone call." "We've been chatting…" came the loud, croaky voice of Dean Bradley on the end of the line. "We really love what you're doing with the car, there's just a few things, recommendations really, it's totally up to you whether you do any of them…"

Extra mile

Anyone that knows Steve will know he's a pretty down to earth guy, and he took all the comments on board in good faith. "It was just silly little things really, things I knew could be better on the car, but at that point I couldn't be bothered, I just wanted it finished. But they gave me the impetus to go the extra mile, and to try a bit harder. It all paid off in the end, and it ended up a better car, but I did then get a bit anal about polishing the heads of bolts, stuff like that."

In truth, it was a bit more than that. The car ended up going back to iKustoms to have the bonnet and decklid seal channels removed and to be repainted under the bonnet. By the third trip back to iKustoms to have the decklid and bonnet repainted, the initial supply of paint had dried up, which meant some more had to be mixed up. You can guess what comes next. "The guy at the paint suppliers reckoned there must have been a mistake made in the original mix, so he spent a whole weekend tinting a new batch to match the first. He got it in the end, but now it's got its own unique paint code, just for this car."

With some further parts detailed up by Evil Ben, the Folks' gave it the collective nod and Steve put the call in to Neil Melliard to ask him to paint the window. "Sure, just bring the window down," he replied cheerily. No chance! Not after all the grief they'd had fitting it, so good old Neil grabbed his brushes and 1-shot up to do what he does so well. "I just had to agree not to make any dust in the workshop that day," laughs Steve.

The final emotional hurdle to clear was The *VolksWorld* Show. "I was just chuffed to be accepted in the first place. I was reasonably happy with the car by then, but when I found out where it was being placed at the show, I started panicking, thinking people would be criticising it, and I didn't know how I'd take that. But it got so many positive comments that it started dawning on me how nice the car really is. I'd been looking at it all those years, but never really stood back from it to take it all in. It was great hearing all the comments, but all I was thinking was we're taking it home and we're going to be driving it next week. To then get a trophy as well was fantastic, but every time I open the garage door, that's the trophy right there." ■

"It all paid off in the end, and it ended up a better car"

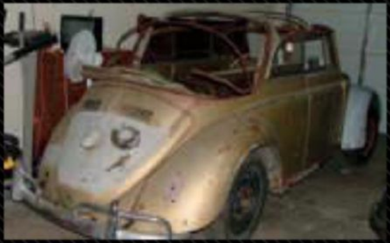
BEHIND THE WHEEL

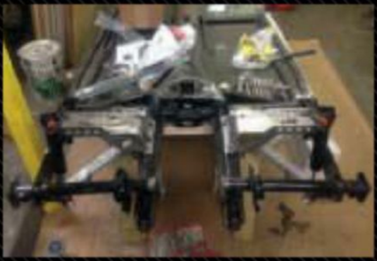
"It drives lovely, it really does, and it's exactly how I wanted it – I can slam it at shows, but I can also get in and out of my garage, which is obviously pretty important. I haven't measured it, but it's probably only got about four inches of lift, maybe a little more at the back, but that's enough for what I want it to do.

"I could get it lower if I put lower profile tyres on it but I like it the way it is, and it's been done safely so that if anything does go wrong, it won't just drop to the floor so it isn't a deathtrap. Kelly's driven it up and down the road outside work, but the throttle linkage is a bit stiff, so I need to sort that out so it's all sweet for her to drive. It could do with the tracking sorted, but I wasn't sure what pressure I'd be driving it at so we're just playing about with that at the moment. Once that's sorted, and now that the weather is better, we'll be out in it all the time. It's a cruiser and I built it to drive, so that's what we're going to do." ■

THE BUILD

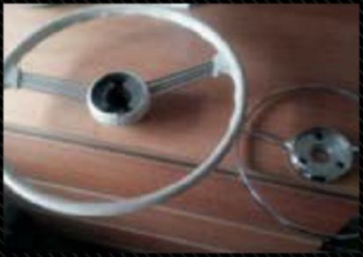
> Old gold
Not how Steve bought the car, admittedly, but how the fella he bought it from in Texas bought the car. Whoever thought to paint an early Cab gold?!





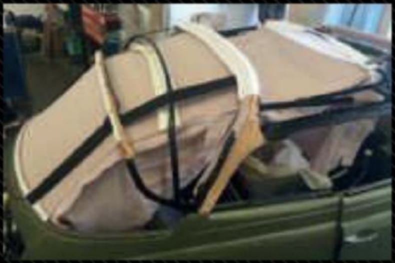
< Old bags
Steve opted for Airkewld's Classic weld-in air ride kit. It dispenses with the rear torsion bars, but he has since re-fitted them and added TransporterHaus spring plates, too

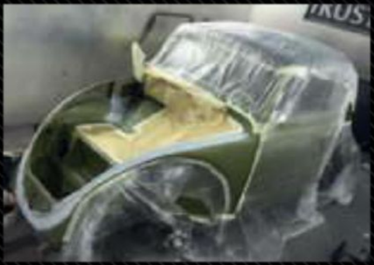
> Got wood
Steve makes his living as a bespoke joiner, so has access to loads of cool tools, none of which are any use in building cars. Nice bits of hardwood there though



< Well travelled
Steve bought the original Petri Pealit wheel from thesamba.com, took it back to the States on holiday with him, had Koch's restore it and then Rich 50 from the GFK brought it back over for him

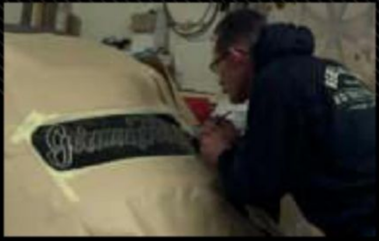
> Hood wink
Though the hood was the most daunting part of the whole project, it turned out to be pretty simple in the end, at least once the right people were found to do the job





< Upping the ante
After 'that' 'phone call from the GFK, the car went back to iKustoms for a little bit more detail work, in this case to have the bonnet and boot seal retaining channels deleted

> The master
No one has a better eye for colour than Prosign's Neil Melliard. He used white gold leaf then a brown to match the hood, highlighted with a green to match the car



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GLADIATORS

T4-T6 Transporters

New for 2016, we have introduced some special show 'n' shine categories for late model water coolers. Make sure you let us know what you are bringing in advance, we love to hear from you

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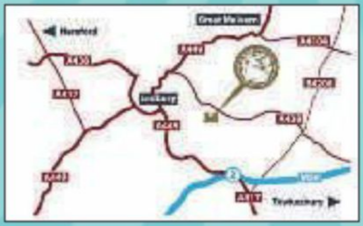

ADVANCE TICKET PRICES

- Weekend: £39 per person (includes camping)
- Day: £13 (09.30-19.30)
- Kids 16 and under free all weekend

SHOW TIMES

Campers: open from 13.00 on Friday 29 July 2016, closes 19.00 on Sunday 31 July 2016

Day ticket holders: 09.30-19.30 (Saturday), 09.30-17.00 (Sunday)

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The Evolution of van

The evolution of this Split has taken, time, vision, friends and plenty of good old fashioned determination

Words Steve Parsons **Photos** David Hall

“We flew to the south of France with a handful of tools, unable to speak a word of French, to buy a Bus we’d never seen and drive it back to the UK. What could go wrong?” chuckles Gareth Smith, the owner of this beat up ’60 Mango Split Screen. That was just the beginning of what turned into a seven year rolling project to preserve, develop and slam an old VW that many folk would say was kippered.

To rewind a few months prior to hopping onto that ’plane to France, Gareth had spotted the ’60 for sale on thesamba.com, and knew he just had to own it. Even in 2008, Bus prices were on the rise and a project like this would still set you back a tidy sum, but fortunately for Gareth, he had a couple of tasty air cooleds he could sell to raise the cash. These were his beloved black ’55 oval and a ’71 Bay he’d bought to tart up and move on. Having sold both, he pinged off an email to the sellers and set the wheels in motion.

The Bus originally resided in California, before it was shipped to Europe in 2006 by well known Dutch VW importers, Kieft en Klok. It was then was sold on to The Barn Shop, who subsequently posted it up for sale on the samba. Gareth took his friend and fellow VW buffer, Dan Smith, along with him to collect the Bus and, once all the paperwork and money had been exchanged, their new European friends agreed to trailer the Bus behind their T4 for the nine-hour return trip to Calais.

Once back on UK soil, I’m guessing they had a touch of sunstroke from their brief time in the sun, as they then decided to drive non-stop back to Gareth’s home in Redditch. That’s a 220-mile journey in a Bus that hadn’t properly turned a wheel in years, was on ancient

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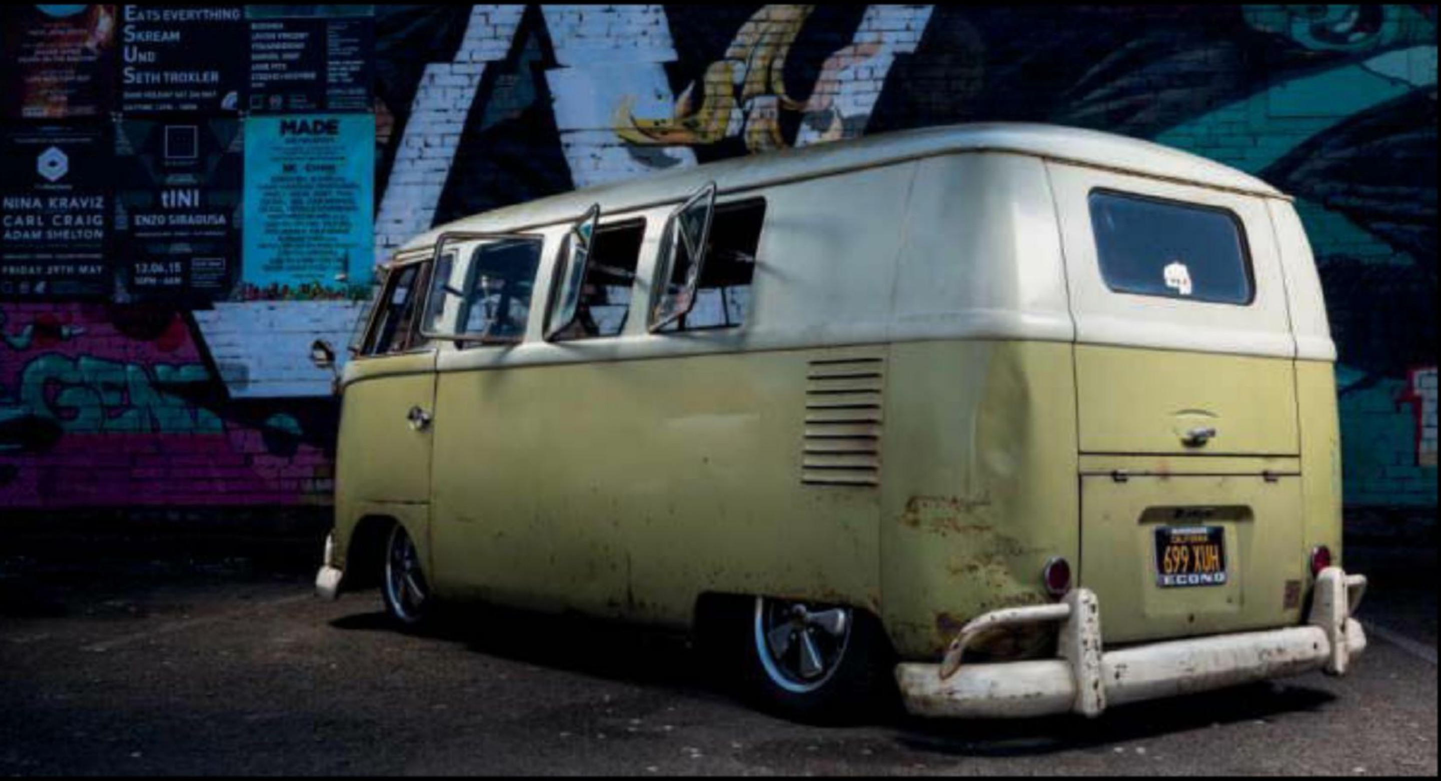


'58-only engine lid was on the Bus when it was purchased and simply needed a squirt of L346 Mango Green to transform it

crossply tyres, had zero heating and holes in the floor. To top off the sketchy journey, the heavens opened minutes after they set off. Pulling on to the hard shoulder, they covered / bodged up all the many holes and gaps and set about concluding the 36-hour rescue mission.

Priority number one

Gareth's main focus was on getting his new pride and joy on the road and usable. The number one priority was to sort out the various bits of metalwork that had seen better days, so it was a strong and sound basis for his other plans. Unlike most vehicles of this age, the list of replacement metal was pretty minimal, with only the three sections of the cargo door side sill, a few areas of cargo floor, battery tray and both rear corners of the cab floor requiring surgery. The Bus already had dropped spindles fitted and was down one spline drop at the rear, so it was getting there in terms of ride height, but there was still plenty more to come. With the stock steels treated to some fresh / safer rubber, an MoT was issued, duly followed by a V5C in Mr. Smith's name, and he was good to go to Big Bang 2008 for its first proper, legal outing.

> **"The couple with the rusty old hippy cars"**

A key element to the resurrection was to tweak aspects of it whilst keeping the old girl available at any time for shows, holidays or just a drive out on a sunny day with his VW loving wife-to-be, Tess. The pair met through their mutual love of all things air cooled (Tess now owns a Pearl White '58 Karmann Cabriolet), so Gareth had loads of support and encouragement throughout the build. Their neighbours even refer to them as "The couple with the rusty old hippy cars."

Next up on the must-do list was the stance. Anyone who knows Gareth will know he loves everything seriously slammed, mildly low just doesn't cut it in his books! Being an active member of the RSVP brethren, low and patina are essential criteria (although a few high rollers are creeping in) and his Bus was missing the latter at this time. In stepped Paul and Colin Pace, with the skills and knowledge to achieve a more desirable altitude for the '60. Paul had a suitable beam that just needed a few inches removing from its width and some adjusters adding, and Colin busted out his welder to join it all together. Moving onto the rear, a 1600 Beetle gearbox was slotted in and then promptly removed again as it turned out to be a dud. A 1300 Bug 'box was sourced and the straight axle conversion could commence with gusto. To top off the new slammed look, Gareth fitted some polished American Eagle 5-spokes.

Engine-eering

During this period of the transformation, the power to the wheels was from a 1641cc twin-port motor that was nicked from the Bay mentioned earlier. This provided sterling service for many thousands of miles, until that is, it gave up the ghost on a trip back from Vanfest in 2010. If things couldn't get any worse, Gareth then lost his job and clearly wasn't in a financial position to fund a new engine or a rebuild, so he had no option but to lay up the Bus in the garage for the foreseeable future.

10 months passed before things improved on the job front and, with a camping holiday in Dorset on the cards later that year, he wasted little time in cracking on once more with his beloved Bus. "My good friends, Matt and Anj Attwood, very kindly offered a long-term loan of a 1641 lump with twin 36 Dell'Ortos, along with full flow oiling, a remote Fram filter and an oil cooler with a fan attaches. It's otherwise stock, but it pushes the Bus along nicely. I can't thank them enough for the loan."

A major improvement made before the trip was to upgrade the brakes front and rear using Porsche 944 vented discs all round.

The stock steering wheel sits higher than stock due to the steering box raise. It still feels quite natural and makes for pleasant driving position

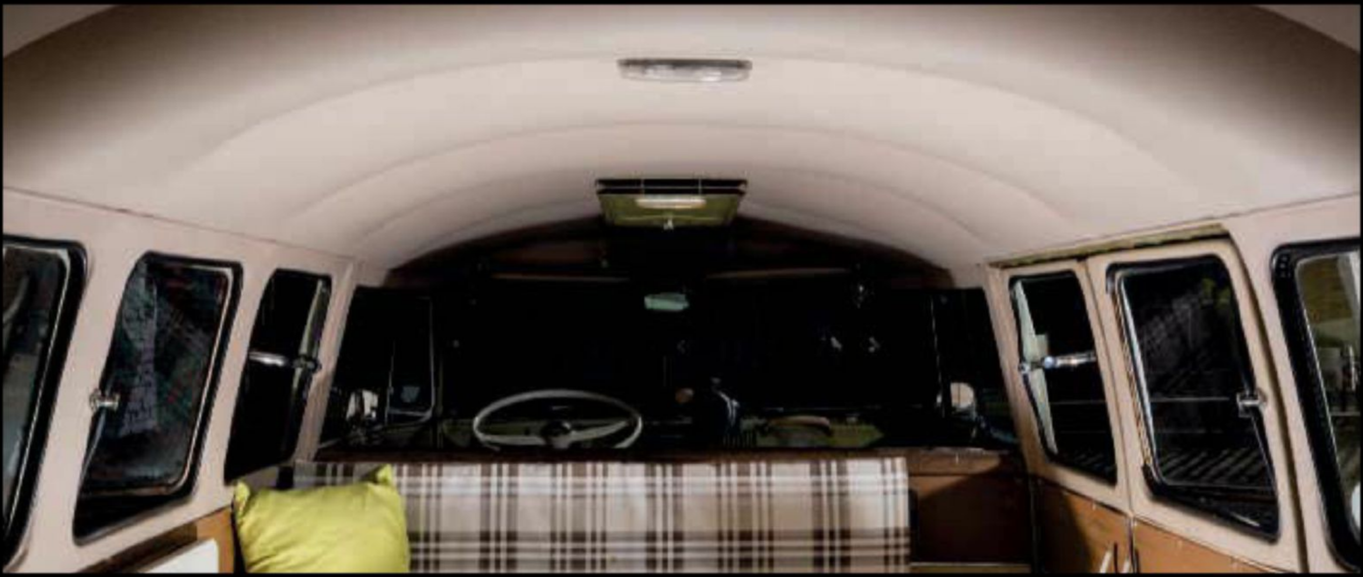
Safaris and pop outs with original long spoon catches keep the air flowing through nicely

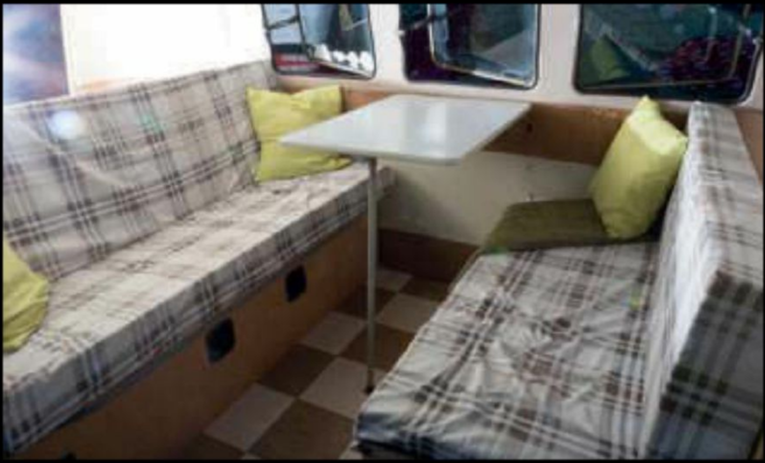
Things are kept simple in the cabin area, mainly stock with added worn goodness

1641cc motor was loaned by friends. It's gestures like this that make the VW community so special

Auto Meter Monster tach and VDO oil temp gauge keeps track on what's happening out the back

Some say Fuchs are done to death. We disagree. A stock, gnarly body slammed over polished and detailed Fuchs is a winning combo because they work

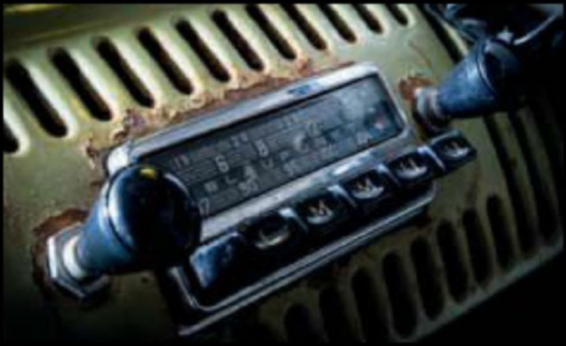




< Home from home. It's comfortable, practical and has heating, too

^ Stunning wool cloth headliner by Bromsgove Auto Trim is a work of art

˅ Dash filler. The real tunes come via an amp stashed away under the seat



> "Improvements are made... and a new set of wheels accompany the work"

Most folk would have just sourced the parts needed, but Gareth went one step further and purchased a complete scrap 944, stripped it of all the bits he needed, sold on various other bits and pieces then weighed the rest in for scrap. That bit of time and effort paid off, as technically he got himself some top quality anchors for free!

Along with the new brakes came another change of wheels, mainly due to the 5 x 130pcd of the discs. The choice this time were gold Teledials he 'borrowed' from a project 924S Porker he bought around the same time. These are a real Marmite wheel but they kind of worked in a strange way, so the '60 remained in this guise for a little while whilst cash was saved to evolve it further.

TECH INFO

BODY: '60 standard model in Mango Green / Seagul Grey
INTERIOR: Homemade with Rusty Lee rock 'n' roll bed
ENGINE: ????? 1641cc with twin 36 Dells
GEARBOX: 1300 Beetle
SUSPENSION: Home brewed 4.5in narrowed beam, stepped spring plates
WHEELS AND TYRES: 4.5 and 5.5in SSP Fuchs; 165/50s front, 185/65s rear

Wheels in motion

You've probably by now noticed a pattern emerging with the evolution of this Bus – improvements are made to the mechanicals, or stance, and a new set of wheels accompany this work. Well, surprise surprise, with the next round of graft came yet another pair of shoes. This time detailed SSP 4.5 and 5.5in Fuchs wrapped in 165/50-15 and 185/65-15 rubber were Gareth's choice, but he would have to wait to see how they looked as major changes were needed to the chassis to fit in with another part of the new look. The modifications this time were required as Gareth was getting altitude twitches and his slamming obsession was in full flow. He wanted to go lower, but for this to happen it would mean cutting out and re-working good solid steel to allow the body to sit lower over the new wheels. Gareth: "I was sick of bashing the steering box on everything I drove over, so a steering box raise was top of the must-do jobs." Whilst the grinder was plugged in, he enlisted the help of the RSVP boys, who proceeded to trim the low hanging gearbox cradle, slice in some chassis notches to clear the track rod arms and then cut out the existing front wheel tubs. Instead of buying off-the-shelf raised tubs, Gareth bashed flat the original ones (whilst being careful to keep the factory pressings) and then added 1.5 inches of sheet steel to fill in the void around the edges. The old Kombi bench seat was also sliced up and re-worked, with some length removed from a few of the springs and the frame re-shaped to fit around the raised tubs. The end result is it fits sweetly and means the stock driving position is pretty much retained.

Sew fine

Interior-wise, things were on the basic side, especially out the back. A Rusty Lee (www.vwrustyleestylee.com) rock 'n' roll bed was in place, as well as a rear-facing bench seat, but both needed some material on them to make presentable. Tess, being a sewing whizz, swiftly transformed some bed sheets into some neat covers and also knocked up some matching cushions. Bromsgrove Auto Trimmers (www.bromsgroveautotrim.com) were given the task of making and fitting a new wool cloth headlining, which improved the internal space considerably. All of this was topped off with a Propex heater, a 240V inverter and leisure battery fitted by Gareth, all of which proved to be a godsend for holidays away and keeping warm all year round.

> "A godsend for holidays away and keeping warm all year round"

All these tweaks, changes and improvements over the years resulted in the Bus you see before you, and Gareth and Tess have enjoyed countless holiday and thousand of smiling miles in it. However, Gareth was keen to 'upgrade', so this '60 has subsequently been sold on and he is now balls deep into the resurrection of a right-hand drive '54 Barndoor. If this Mango Bus is anything to go by, the new acquisition will be very special indeed! ■

Thanks: Tess for her support of my crazy ideas, dad for the loan of his driveway, the folk at the now defunct Ditch Dubbers club, the guys at Fellows Speed Shop and all the RSVP clan for their help, encouragement and skills.

We've followed this Bus for many miles and it looks the dog's danglies on the move

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Paruzzi Magazine number 09

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Paruzzi Magazine
09
Paruzzi Magazine

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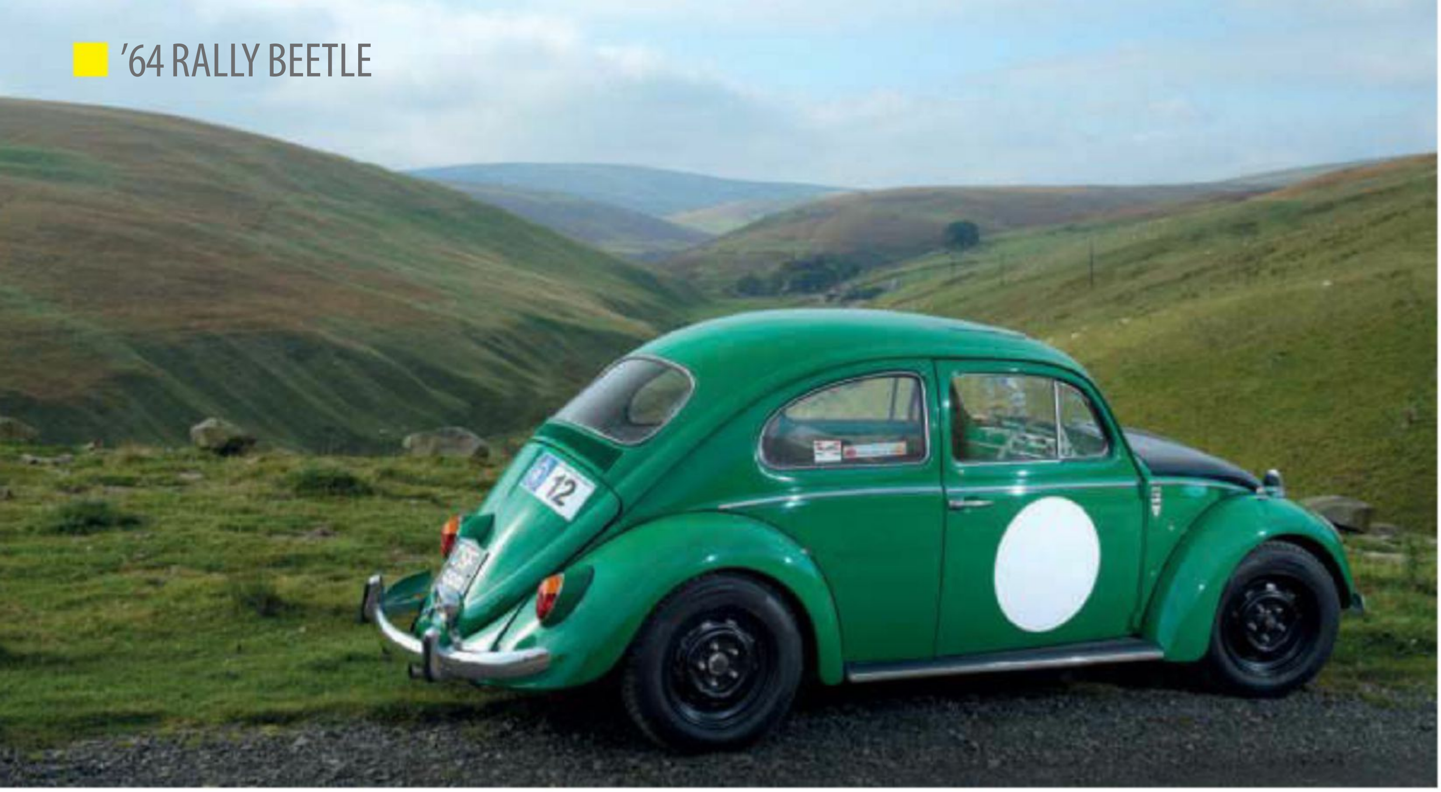
Once bitten...

Five years ago, Keith Miller built himself a rally Beetle, but when he sold it he missed it so much he decided to rebuild his Cal Looker in a similar vein

Words Mike Pye **Photos** Adrian Brannan

Considering the enormous success Beetles have enjoyed in rallying over the years it’s surprising how few people have chosen to build rally-style Beetles for the road. I suppose the recent surge of interest in Vintage Speed cars could be considered such, but the majority of such cars we’ve seen of late have been far from cheap to build, generally based around Oval and Split Beetles and with a plethora of desirable period parts, the cost of which is enough to make your eyes water. But step away from the ’50s for a moment and consider the ’60s, or even the ’70s, and cars like this can be built for a modest outlay, and provide more fun per mile than almost any other kind of modified VW.

Beetles continued to be successfully campaigned in rallying throughout both of these decades in sufficient numbers to mean there’s plenty of source material to draw inspiration from. Keith Miller knows this only too well as this is the second rally-style Beetle he has built, the first being a ’72 1300A with a twin-carbed 1600 we featured in our February 2011 issue. What makes this one a bit different, however, is that it’s based on a car Keith has owned for two decades, a car that has gone through life with Keith and has changed as his tastes and influences have evolved along the way. “It’s hard for me to believe I’ve owned this car for 20 years,” he says with a smile. “I bought it in December 1995, when I was a young and enthusiastic 24-year old. I dragged it out of a garden in Newcastle and trailered it back to Edinburgh. Though it was far from mint, it had never been restored, was a genuine sunroof ’64, with a lovely original interior and an indicated mileage of just 60k.” As you can see from the build pictures, Keith wasn’t lying about the condition. The mileage may have been low, but years sitting in a garden in the north east of England had done it no favours and it needed extensive bodywork restoration. “I recall the worst part was the demoralising job of replacing every captive nut for the rear offside wing,” recalls Keith with a grimace.



Drag your eyes away from the beautiful scenery for a moment and take in Keith's car. Early 911 / 912 steels, 165 Hankook rubbers all round and just a touch of nose down

That alone should give you some idea of the state the car was in, and things didn't get any better when the body was lifted from the 'pan and that proved to be rotten as the proverbial pear as well. What was important to Keith, however, was the year and model. "I was heavily into California Look, that was being revived on the back of Keith Seume's at the time new book on the subject, and I thought a '64 sunroof was the ideal car to build a Cal Looker out of. I had it painted in a more modern shade of Java Green, fitted a Puma beam and the latest rims, Flat 4's new BRM alloys. I then built up a 1641 with a mild Bugpack cam, twin Weber ICTs and ran the car like that as a fair weather car for many years.

> "I like to think I've captured some of the essence of the original [Scania-Vabis '64 RAC Rally] cars"

"Eventually, after a lot of taunting from mates, I built a replacement 1776 engine, based around a Laurie Pettitt wasserboxer bottom end, with Gene Berg ported cylinder heads and manifolds, an Engle 120 cam and twin 40 Dell'Ortos. As I'd already fitted a balljoint front beam, I added later Beetle discs at the front, a later gearbox with four-stud drums and switched to Porsche 2.0-litre alloys.

"But when I completed my previous rally Beetle in 2010, it was taken off the road and laid up." The reason? "The rally Beetle was just too much fun to drive, and I could still use it as a daily driver as well. However, after two years of driving it, I had to sell it as if I didn't I knew I would never drive my Cal Look Beetle again. So I came up with a plan. I would rebuild my '64 once again, but this time as a rally Beetle, then I would still have my old car, but in a format I wanted to jump in and drive and would get more enjoyment out of." Actually, so taken was Keith by the whole rally thing that he took a mid-life crisis swerve down the Subaru Impreza WRX route for a year, but soon came to his senses and decided a Beetle was more him.

TECH INFO

BODY: 1964 sunroof Beetle, repainted in Java Green
INTERIOR: Stock with additional gauges and bent shifter
ENGINE: 1776cc Type 1; Wasserboxer 69mm crank; Gene Berg ported heads with stock valves; Engle 120 cam; twin 40DRLA Dell'Ortos; stock oil cooler; air tube feeding into back of fan; Vintage Speed exhaust.
SUSPENSION: Baljoint beam with adjusters; stock anti-roll bar; Koni reds all round; Porsche pattern VW discs/drums
WHEELS AND TYRES: Stock Porsche 911 / 912 steels; 165 Hankooks

Class of '64

That settled, Keith decided he needed a theme to base his new creation around, and he found that in the Scania-Vabis rally Beetles that took part, appropriately enough, in the 1964 RAC Rally. "They were actually very successful. Berndt Jansson and Bertil Soderstrom came first and second in the 1300cc GT class, and eighth and 12th overall against some much quicker, more powerful cars that year. I did some further research on them, with help from Peter Noad's *VW Beetle in Motorsport* book, and loosely based my new car on them. Hence the black bonnet, triple spot lamps and black Porsche steel rims, albeit 911 ones instead of the 356 versions the Swedish cars used, due to the use of 356 alloy drum brakes."

It's not a copy, perhaps more a homage, with multiple differences evident both visually and mechanically, but that's the beauty of building a car like this – you take the bits you like, discard the bits you don't, like the extra roof-mounted spotlight all the Scania-Vabis cars had, for example. And while putting together a full Okrasa 1300 motor (as per the Swedish racers, and the reason the cars were bumped into the GT class) was not necessarily out of the question, there was no need when Keith already had a 1776cc engine in stock.

Although the rebuild sounds simple enough – raise the front suspension back up, paint the bonnet, add the rally car touches

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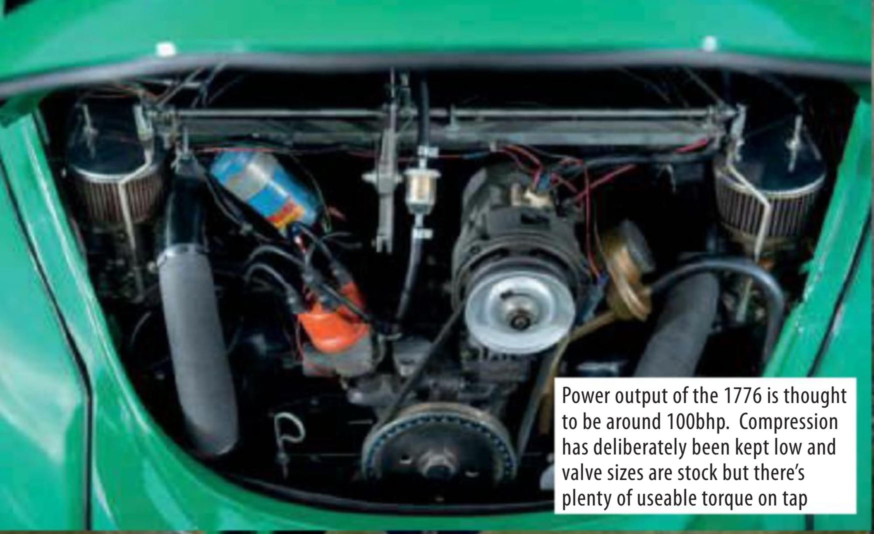

Power output of the 1776 is thought to be around 100bhp. Compression has deliberately been kept low and valve sizes are stock but there's plenty of useable torque on tap

Outer spots are stainless with Halogen bulbs, NOS Lucas one in the centre is just for looks

BEHIND THE WHEEL

"A good, tight, original Beetle is a joy to drive, but it can be improved immensely by a few simple modifications. Koni 'red' shocks are the best thing you can fit to a Beetle, they really do sort out the handling of a swing axle car. I'm running them on the middle setting, which gives perfectly neutral handling. I tried a thicker aftermarket anti-roll bar but it was hopeless, just inducing horrid understeer, so I fitted a replacement stock anti-roll bar and it works beautifully.

"Brakes on a Beetle have never been their strong point – hence why the Scania-Vabis mechanics fitted Porsche 356 alloy drums, but you can't beat discs on the front, and using Porsche pattern 5-bolt VW ones meant I could run my favourite 911 / 912 steel rims.

"The front spots look period but they're modern stainless ones with 55W halogen bulbs. Combined with 100W bulbs in the NOS sloping lamps, I can see into next week!"

Compare this to the interior when the car was a Cal Looker and you'll see how little has changed. Neat rev counter dash panel came from www.kaefervwrostfrei.de

Spare wheel is strapped tight to prevent it crashing about under the bonnet

We love original dealer badges, especially enamel ones like this Leeds-based Moortown Motors one

Cheeky modified Mach 1 logo is a reference to the Belgian-built '64s that came with Okrasa 1300s

Triple VDO gauges in camera finish panel are spot on and change the wheels, things are never quite that straightforward. "Add in some paintwork, a few further mechanical modifications and the 'simple rebuild' inevitably took way longer than I expected, but I couldn't be happier with the outcome. I like to think I've captured some of the essence of the original cars but, better than that, I'm back out driving my old '64 again, and with the recent modifications I've made it now drives just as nicely as my old rally Beetle did.

King Koni

"Lowered cars look good, I'm not about to deny that, but these days I'm more interested in going round corners at speed and getting over speed bumps or rough ground without braking than I am in looking cool. And one thing I can say for certain, with Koni shocks and near stock ride height it drives a lot better than it did as a Cal Looker with the front end wound down on the adjusters. Having said that, during the rebuild I did discover the trailing arms were too tight in the front beam bushes, which is no doubt why the ride quality was so poor before."

The one area Keith felt passed muster in both Cal Look and rally guise is the interior, though again a bit of 'retrofication' was in order. Gone is the small diameter sports steering wheel and trigger shifter, replaced with the stock parts Keith slung in his shed some 20-odd years ago. I enjoyed Keith's explanation of how he 'modified' the shifter in the same way the Scania-Vabis mechanics did in '64: "I did what they must have done and bent a stock one in the vice to bring it closer to the driver. It's basically what Porsche did with the 356, though they may have had a more expensive vice."

Before he set off for the first gravel track at speed, Keith sensibly had a word with the engine, splitting the case to remedy a few minor oil leaks that had developed and to swap to longer Porsche 356 pushrod tubes, a trick he picked up from his previous rally Beetle as he feels their extra length helps prevent oil being centrifuged up the tubes in hard cornering. He also splashed out on a new Vintage Speed big bore exhaust, more in keeping with the car's new look, then gave it all a good clean and tune up before showering it all in gravel and dust.

"The great thing is you don't need a big engine with a car like this. With narrow cross section tyres, even with a stock engine and a wet roundabout you can achieve much in the way of entertainment, provided you know what you're doing of course. With the

This car has been built purely for fun, and doesn't it look it? "I've no intention of competing this time as the car would breach all the rules on period homologated parts only," explains Keith

It's all about attention to detail with a car like this. See those RAC Rally stickers? They're perfect copies of the originals, in the exact locations they were stuck on the '64 rally cars. Seriously!

"I'm more interested in going round corners at speed and getting over speed bumps or rough ground without braking"

extra power I've got in this engine, though, in the dry the grip is so good it exceeds your ability to stay on the stock vinyl seats. I now realise just how much difference the Porsche tombstone seats I had in my previous car made. My favourite bit of all, though, is the lack of baffling in the exhaust, providing much trumpeting and popping on the overrun when overtaking slower cars on A roads. Despite being 54, I still like to be a kid sometimes, and this car provides the perfect opportunity to do that." ■

THE BUILD

> The beginning
It may have been a one owner, 60k from new car, but it had clearly seen better days. However, despite being parked without a windscreen, the interior was in great shape and remains in the car to this day

< Hard graft
The bodywork, on the other hand, hadn't fared so well, so Keith had to put a lot of hard graft in to turn what you see here into the car you see below. "Hey, the roof edges were good, and it had a rot-free sunroof," laughs Keith. Shame someone saw fit to hack the rear valance to remove the engine, eh?

> Cal Look phase
When Keith first restored the Beetle he was heavily into Cal Look so the car had a 1641 and repro BRMs, then a 1776, disc brakes and Porsche 2.0-litres. Note EMPI eyebrow decklid, too

< Full circle
Neatly showing the longevity of subtle modifications, little has been done to the interior since the Cal Look days, save for going back to a stock tiller and shifter and steering wheel

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King of Cal Look

Ron Fleming was in the thick of it when the famous style was born. Now he's back behind the wheel of a 'Looker, he feels 20 again!

Words Georg Otto **Photos** Sven Zimmerman

Almost everybody in the VW community has heard of Ron Fleming, co-founder of FAT (Fleming, Aronson, Thurber) Performance and long-time Der Kleiner Panzers (DKP) VW club member. He’s not only been in the scene for over 50 years now, he helped shape it in the first place! Although his automotive career started with a ’65 Ford Mustang. “I was drag racing it, but I broke 11 transmissions in the first year I owned it and got pretty tired of it,” Ron recalls with a grin. So what was the answer to his problem? “I was still going to school and thought I need something a little more economical, so I bought a Bug. Greg Bunch, another student of Anaheim High School who was a member of DKP at that time, got me to come to the meetings after three or four times. At first I didn’t want to go because I was in a car club with the Mustang and it was all a bit of an effort. But then I and some others joined them and we kind of changed the direction of the club. We went more for a drag race club, and less of a social club. Plus we pushed what was later to become known as the California Look. There were probably 20 club members at the time, and about

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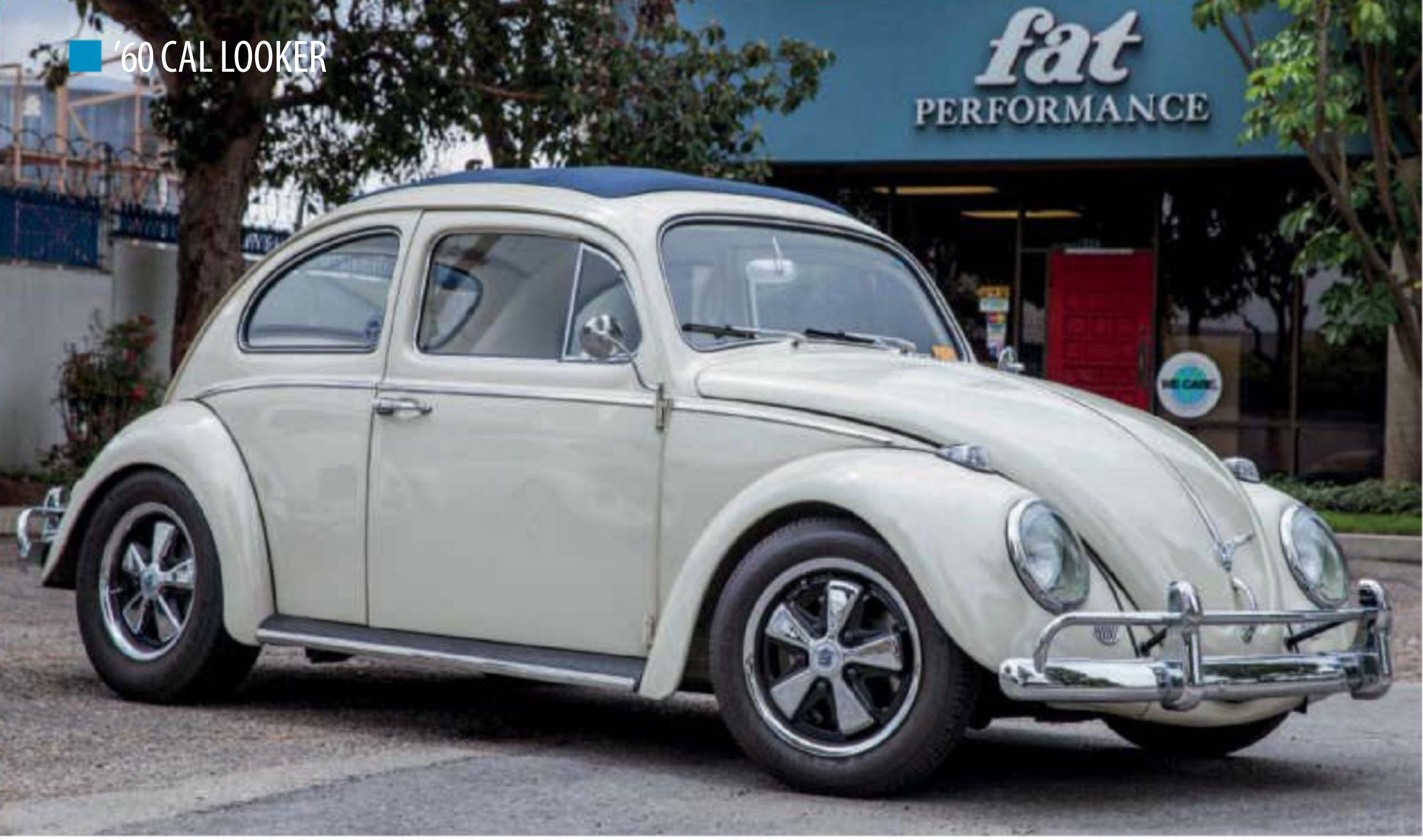


▲ Ron's '60 looks pretty stock to the untrained eye, with only the Flat4 Fuchs marking it out as perhaps something a bit special

seven or eight of us had a distinct feeling about the way things should look. By doing our own cars, we persuaded other people to do the same thing. It just kind of snowballed from there.

"We never used the term Cal Look until Lane Evans, art director for *Hot VWs* magazine, coined it California Look." But back to Ron. He earned his first dollars in a small shop named Westphalia Motors. But when he heard about the opening of an S&S Racing store in Orange, he signed on for a job there. Slowly but surely he built up a reputation amongst racers of air-cooled VWs and became good friends with Gene Berg. When Berg started his own business, Gene Berg Enterprises, Ron became salesman and store manager at his shop. By the late '60s, he was a well known engine builder himself and it was time to stand on his own feet. So, in 1971, Ron and his friend, Greg Aronson, established Fleming & Aronson High Performance. "At first we thought we could work three days and go surfing for the rest of the week. But we soon had so many jobs we had to decide which we like better. We were wise and choose the business," recalls the jovial 70-year old.

> "I never wanted to be put on a pedestal, I just wanted to be a guy with you"

Originally, the business began as a street / drag engine and transmission shop, but by the late 1970s FAT Performance began developing the air-cooled VW engine – Type 4s in particular – for off-road applications and, in 1982, engineered the first water-cooled VW Rabbit (Golf) motor for that use. Their hands-on experience and acquired knowledge, coupled with competitive drivers and quality equipment, have produced impressive win records in both the desert and short course racing events. They have been 10 time SCORE (Sanctioning Committee Off Road Events) engine builders of the year. "Through all that, we kind of drifted away from the Cal Look scene, which was almost extinct by the early '90s anyway. Cal Look was now about pastel colours, graphics and stock engines, covered with chromed tin and other bits and pieces. And because we were so successful with off-road racing we really focussed on that sport."

TECH INFO

ENGINE: 2276cc Type 1; AS41 case; 82mm CB crank; 94mm Mahle pistons and cylinders; CB Super Race rods; Engle W125 cam; stock rockers with 911 adjusters; 48 IDA Webers; Magna Spark II distributor; MSD 6AL ignition box; 911-style fan shroud; A1 Sidewinder exhaust

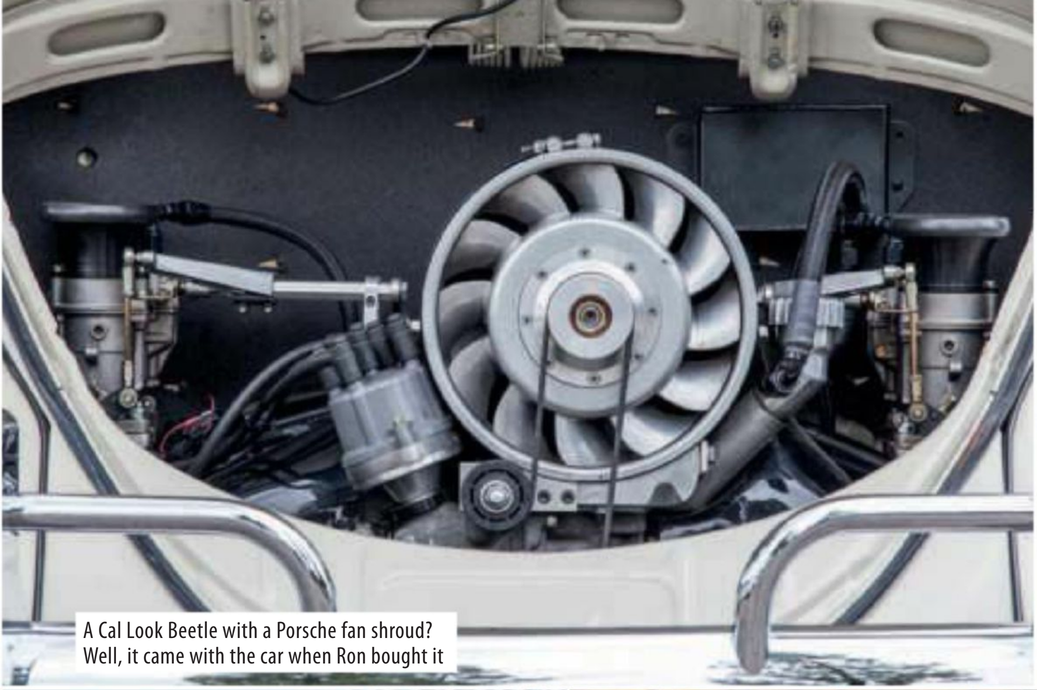
GEARBOX: Rancho Freeway Flyer; Rhino case; Quaife LSD; heavy duty internals

SUSPENSION: CB dropped spindles; stock height rear; Boge shocks

Until the traditional California Look made its comeback in the mid-'90s. At the same time, DKP was revived, but not without asking Ron first for permission. "Through these young guys, I got in contact again with the California Look scene, which grew immensely when Keith Seume published his book, *California Look VW*, in 1996. All of a sudden, people from around the globe knew my name and wanted to know stories from back when I was young and Cal Look was just born. But I never wanted to be put on a pedestal, I just want to be a guy with you, you know?"

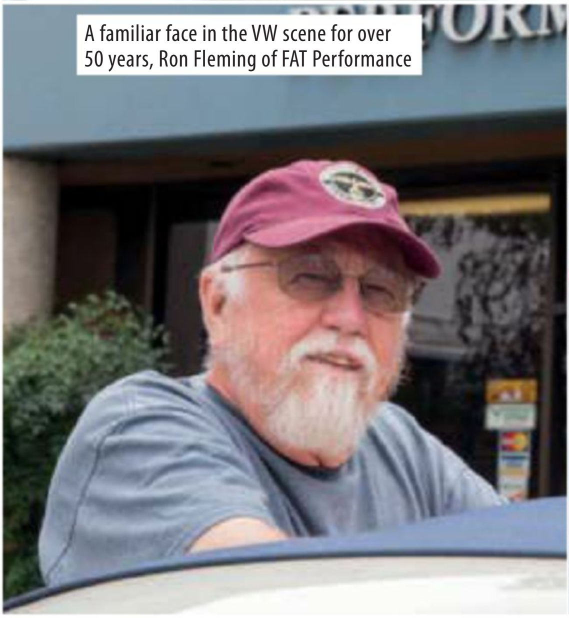
Back in the game

"When there was a DKP cruise night, or a club event, I'd show up with my '72 Porsche 911S, which I bought in 1975. It's a fun car, modified with some SC-spec cams to boost power up to 212bhp, 22 more than stock. But it wasn't the same", recalls Ron. "It's just not a Bug. But it wasn't until 2006 that I decided to buy another air-cooled Volkswagen. I thought



A Cal Look Beetle with a Porsche fan shroud? Well, it came with the car when Ron bought it

48IDA Webers are a must have on any Cal Look Volkswagen



A familiar face in the VW scene for over 50 years, Ron Fleming of FAT Performance

MSD
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This is the favourite spot for an MSD ignition system, in this case a digital 6AL

about the possibilities, pondered different options until I knew what I wanted. There were only three requirements. Firstly, it had to be a restored car with maybe just some minor things left to do. I always built my own Bugs but didn't want a project in my 60s. Plus I am still busy with my company, so I just wanted to enjoy the vehicle. Second, no Oval! I love Ovals, but the rear window is too small and it gets harder and harder turning your head when you get older. And last but not least, it *had* to be a ragtop."

2006 passed by and no serious candidate showed up. 2007 too, but Ron was patient. And then it happened in 2008. "I spotted a Pearl White ragtop in the showroom of a high class car dealer in Newport Beach. It looked a bit out of place in between all those Bentleys and Ferraris. So I checked out the car and found out it belonged to a Porsche guy I know. He bought it as a clean, stock vehicle and had it restored and modified for quite some money! But he soon found out that the little Volkswagen isn't his cup of tea and opted to sell it on. The price tag read $26,500. A fair price when you take into consideration it is a restored '60 ragtop equipped with a beefed-up tranny, a 2276cc Type 1 engine and Flat4 Fuchs repops." Ron put this car on his watch list. "I knew the price

Satin black breather box helps keep oil vapours out of the engine bay

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Beware of imitations! DKP decals should only be on member's cars

SPEEDFLO
by
JayCee

JayCee remote oil filter is sited under the left-side rear wing would drop after a while because, unlike a stock VW, you are not selling a 'Looker easily." So our man saw the car disappear from the showroom after six or seven months, then, a short while later, appear on thesamba.com. Price now: $24K. Still no one called or emailed. When the price was reduced to 20 grand a few people called the owner, but none of them went to look at the car. "The pictures in the ad weren't very good, pretty blurry and not attractive at all," remembers Ron. "I saw it drop down to $15,000 and knew I had to call the guy again! With my good friend, Gregg Bunch, I drove to the seller's place, checked the car out, took it for a test drive and… wasn't convinced. I spotted some paint flaws, I didn't like the brakes and so on. Little things, yes. All in all, the Bug was a great deal, but we left without taking it. After a minute or so driving, Gregg said: 'If you're not taking the car, I'm going to buy it.' And so I knew I had to get it. A day later I showed up again and offered him $13,500, saying that was all I could afford. He hesitated at first, but when I spread out the notes on the trunk he grabbed them and stretched out his hand, saying 'Deal'."

> "Sunny is a rememberance of a time I had and I love it!"

So now Ron had a new toy to play with. "Even though the former owner spent a lot of money on the car, there were still some things I didn't like or wanted improved. The brakes, for example. So I put CB Performance front discs on the dropped spindles. The drums in the back are good, but I had to have discs up front." The most annoying thing for a DKP1 member was the paint job. "The doors and hood weren't perfect, so I had them repainted to match the standard of the rest of the car."

And being the experienced engine builder he is, you won't be surprised to hear Ron took the motor apart to check everything. "Don't get me wrong, it's a well built Type 1 engine by JayCee, but the characteristics weren't exactly what I wanted. Now the 2276cc powerplant has an Engle W125 cam and stock rockers with 911 adjusters, CB Performance Ultra Wedge 2 heads with 42mm inlet valves and 37mm exhaust valves, plus the mandatory 48IDAs." And what about that Porsche-style fan shroud? That isn't typical for Cal Look cars. "That was on there when I bought it and it does cool down the engine really well, but I may change it in the future for a more traditional look," replies Ron.

More important than the shroud is what 'Sunny' (that's the name Ron has given the car) is doing with it. "When I get in I am a 20-something again. As long as I am in it, I feel joy! That's why I can't wait for the weekend. I love my job, but I usually don't take the Bug to get there. So my private Volkswagen fun begins with the weekend, and it always involves friends. Young ones, old ones, it doesn't matter. Sunny is a remembrance of a time I had and I love it!" ■

TECH INFO

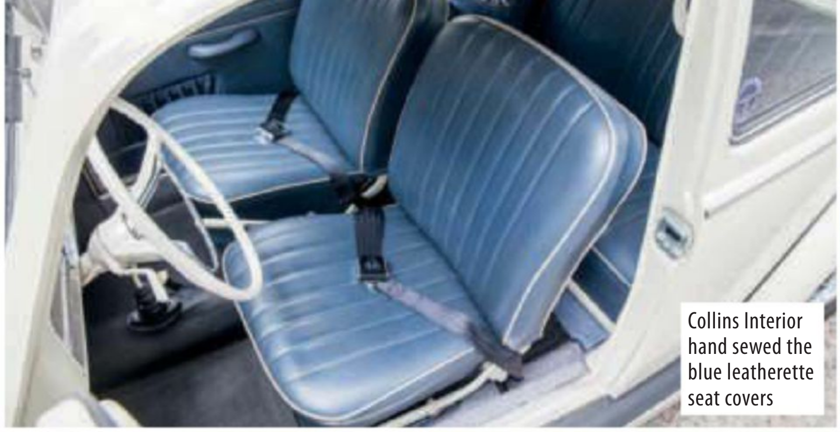
BODY: 1960 ragtop in L87 Pearl White, withn blue Sonnenland cloth ragtop

INTERIOR: Stock steering wheel with clock horn push; Retro Sound stereo; two Pioneer speakers in TMI parcel shelf; Bambus shelf; blue leatherette seat covers

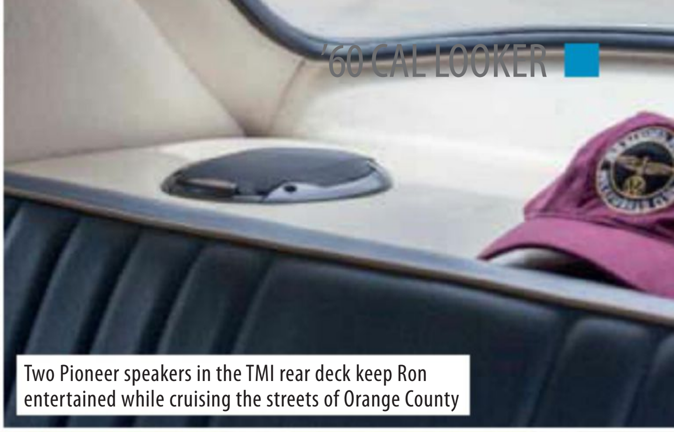
BRAKES: 5 x 130 PCD CB discs up front; drums rear

WHEELS AND TYRES: 5.5 and 6 x 15in Flat 4 Fuchs; 145 Firestones and 215/60 BF Goodrichs

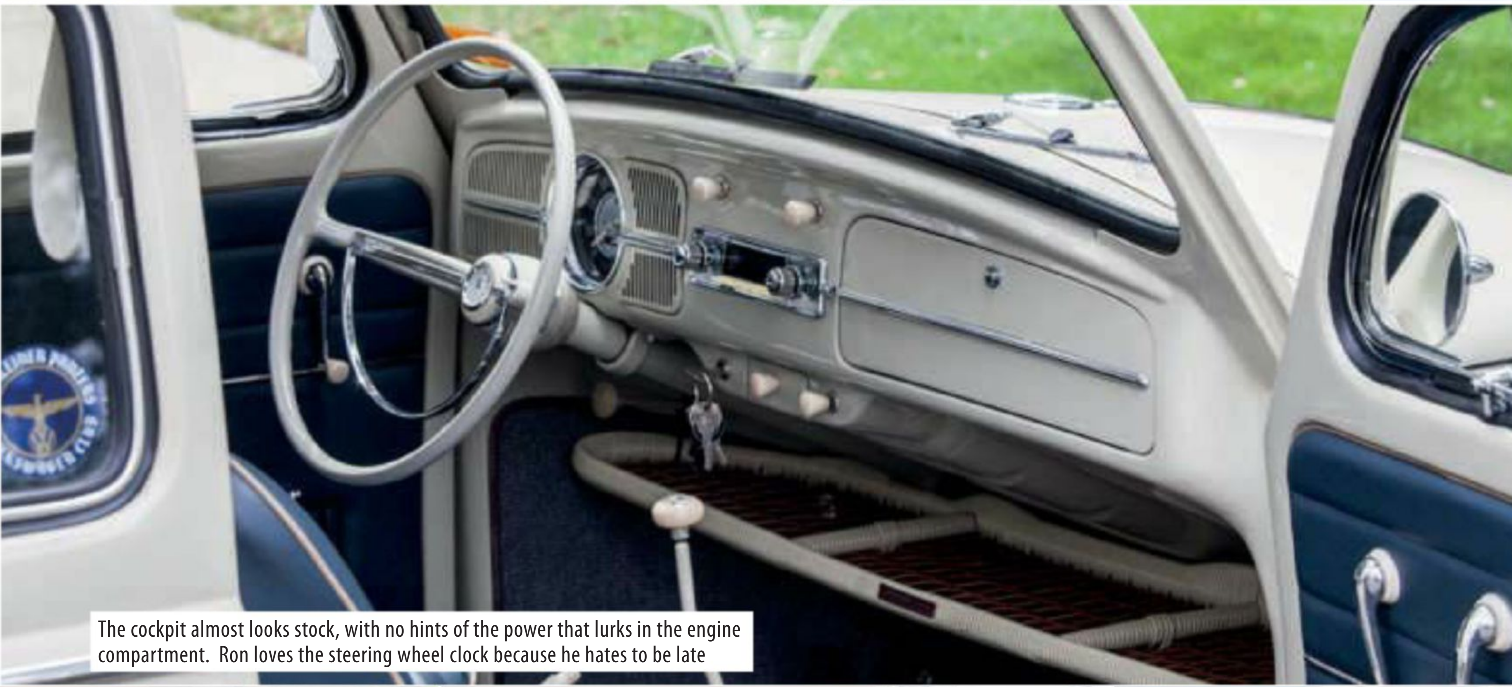
It may look subtle with its overriders and chrome trim, but it packs a healthy 180bhp Type 1 under the decklid



Collins Interior hand sewed the blue leatherette seat covers



Two Pioneer speakers in the TMI rear deck keep Ron entertained while cruising the streets of Orange County



The cockpit almost looks stock, with no hints of the power that lurks in the engine compartment. Ron loves the steering wheel clock because he hates to be late

Matching blue door cards complete the interior

Since these pictures, Ron has changed the shifter for a Gene Berg version with a blue top and 'Sunny' script

DKP cap on the rear shelf shows Ron's long-time alegiance to the premier Cal Look club. Cushion shows his age!

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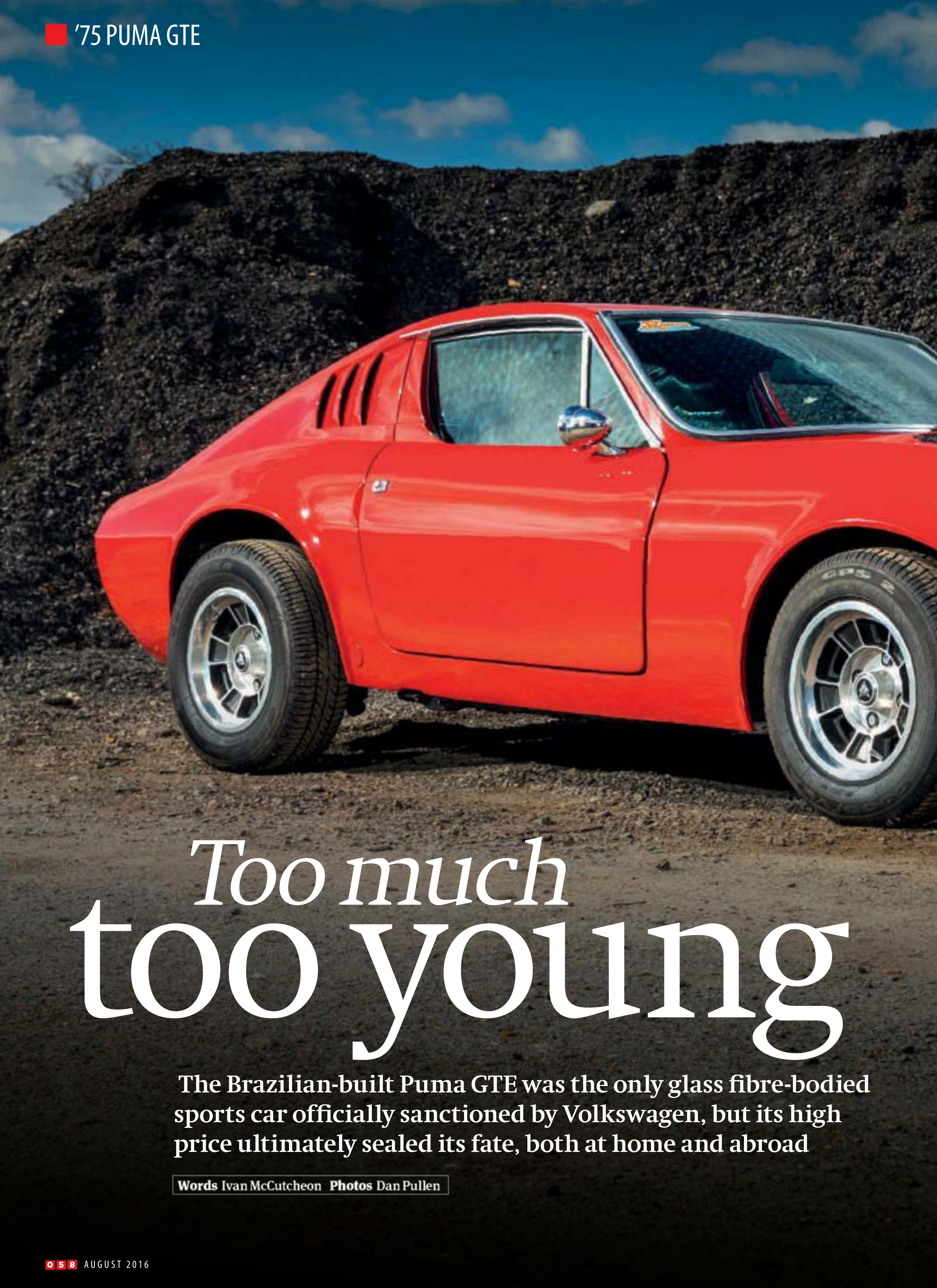

Too much too young

The Brazilian-built Puma GTE was the only glass fibre-bodied sports car officially sanctioned by Volkswagen, but its high price ultimately sealed its fate, both at home and abroad

Words Ivan McCutcheon **Photos** Dan Pullen

SP-SAO PAULO
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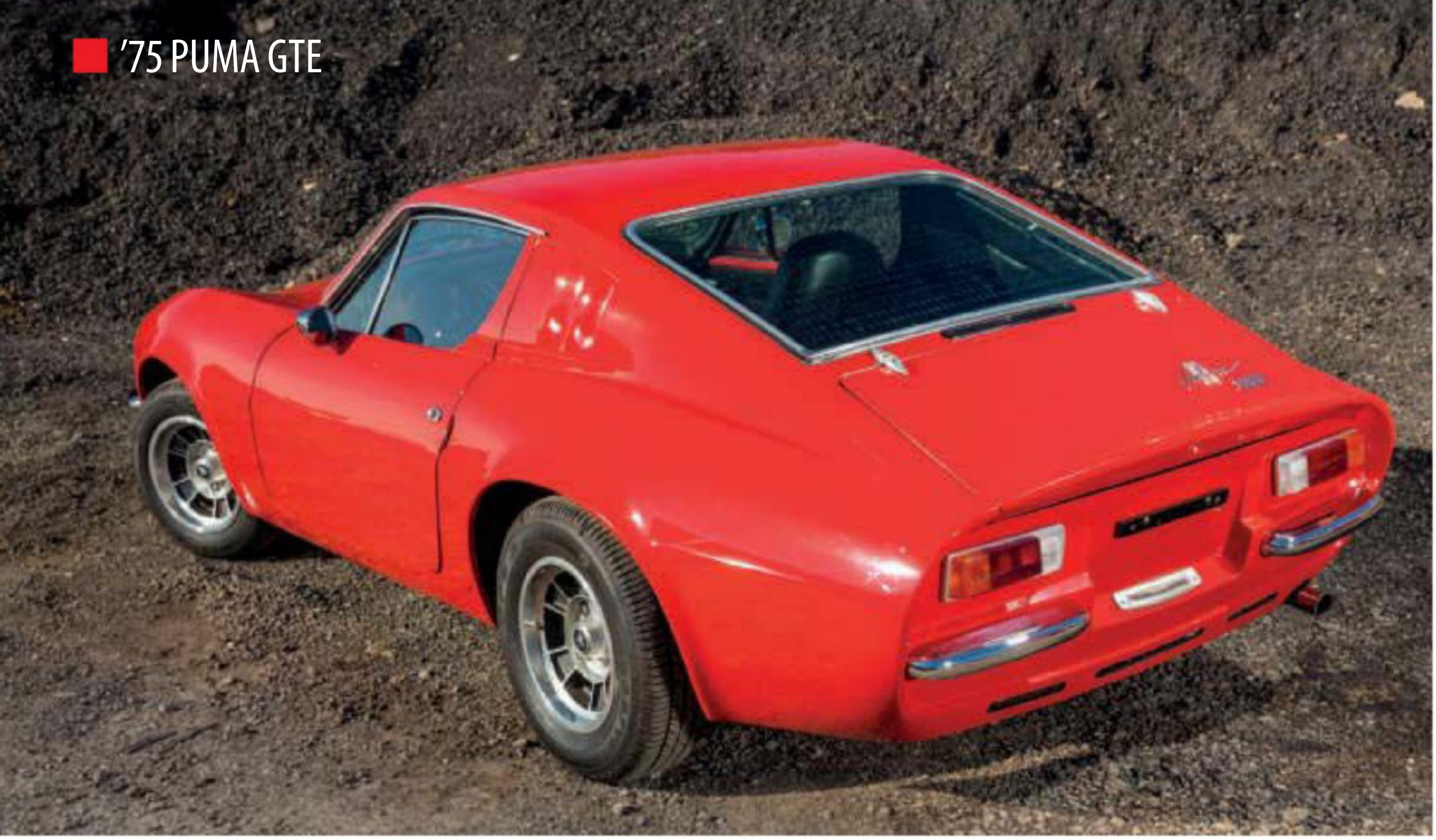
In the UK, sightings of Pumas are something that has become folklore. The area I live is said to be home to a rarely seen local big cat, The Surrey Puma. And Surrey is not alone, as many counties around our country apparently have big cats roaming wild. I would put this down to vivid imaginations had it not been for the fact I actually saw one myself and have two unrelated witnesses to support what happened. At the start of the 1990s, I was in Glossop, Derbyshire attending a photoshoot on a pair of Split Buses owned by restoration specialist, Alan H Schofield. We were up on the moors and we saw a Puma walking beside a wall on the other side of the road from us. As it got to the end of the wall where it met another wall, it jumped up and over, then walked up the field, again staying close to the wall. The photographer, Alan and myself could not believe what we were seeing, but all three of us saw it.

We doubt visitors who attended this year's *VolksWorld* Show could believe what they were seeing either when they clapped eyes on the Brazilian VW line up Just Kampers had shipped over. Amongst them, the 1975 Puma GTE shown here was undoubtedly the prettiest of the exhibits. However, this was not the first sighting of a VW Puma in the UK, as at one point they were actually sold in this country! Towards the end of 1972, Mike Griffin of Cartune, a company that made and sold VW performance parts and accessories from its branches in Teesside and Middlesex, became UK agents for the exotic Brazilian sports car. Griffin's company was an official VW agent, with two outlets in Teesside, and it was from there you could buy one of these cars brand new. However, few found homes as the Puma was far from a cheap car by the time it was here. In 1972, it cost £2,200 in LHD format and £2,350 for a RHD one. To put that into perspective this was approximately £400 more than a new Range Rover! Alternatively, you could



The clearly Italianate styling of the Puma GTE called on elements of supercars of the time such as Lamborghini and Ferrari

have walked into a showroom and left with four brand new Minis for the same price. Needless to say, Cartune sold very few Pumas. Those that were sold were all GTE Series 1 models.

Puma history

The VW-based Puma sports car story is very interesting, as the car only came about due to the DKW car company being bought out by VW. Prior to this event, a group of motor racing fans based in a city called Matão in the Brazilian state of São Paulo had been building glass fibre-bodied sports cars based on the 1,000cc, two-stroke DKW F94 saloon car chassis and running gear.

The figurehead of Puma, racing driver, Genaro 'Rino' Malzoni, led the project from 1964. Initially, the plan was for the front-engine / rear-wheel drive car to have a steel body, but at the prototype stage it was clear the power-to-weight ratio deemed a change to a body moulded from glass fibre was the only way forward. The first prototypes of the GT Malzoni were completed in 1965.

> "The best looking VW-based vehicle of all time"

The original plan for the GT Malzoni was not as a road going car, it was supposed to be a circuit racing car, but plans soon changed due to the reception the car received from the Brazilian public. The original body was slightly modified by the designer, Anísio Campos, and the car went into low volume production as a road car.

The Malzoni / Puma was still reliant on the DKW 1000 mechanicals, but when Volkswagen took over German Auto, of which and DKW was part, it was to result in a potentially damning issue for Puma. This is due to the fact a company called Vemag manufactured DKWs in Brazil and supplied Puma with the components it needed. When VW chose to cease production of DKW products at the end of 1967 it meant Puma was in big trouble, as if it no longer had access to the necessary mechanical parts it couldn't produce cars!

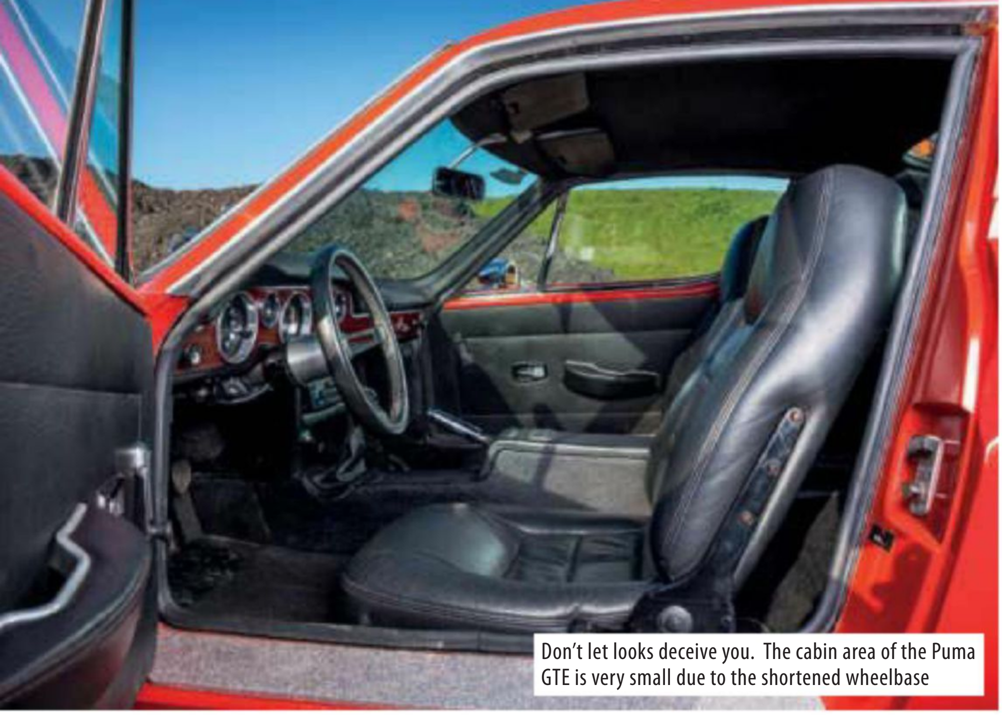
The demise of DKW in Brazil saw Jorge Lettry, the former head of the competitions department at DKW Brazil, looking for a new job. Fortunately, he became a partner at Puma, and had the necessary contacts to be able to negotiate a deal with VW that was to solve both the issue of supply of mechanical parts and the future of Puma. VW agreed to supply complete Type 143 Brazilian Karmann Ghia TC rolling chassis with transmissions and engines to Puma. Masterstroke though this was, the VW was a totally different layout to the DKW and this meant a new car had to be developed to suit the new chassis.

Malzoni and Campos worked together on the new VW Puma, which resulted in a car which many, including myself, view as the best looking VW-based vehicle of all time. Campos clearly took styling cues from cars such as the Giuseppe 'Nuccio' Bertone-designed Lamborghini Miura and Ferraris. The result worked from every angle, the car was stunningly attractive.

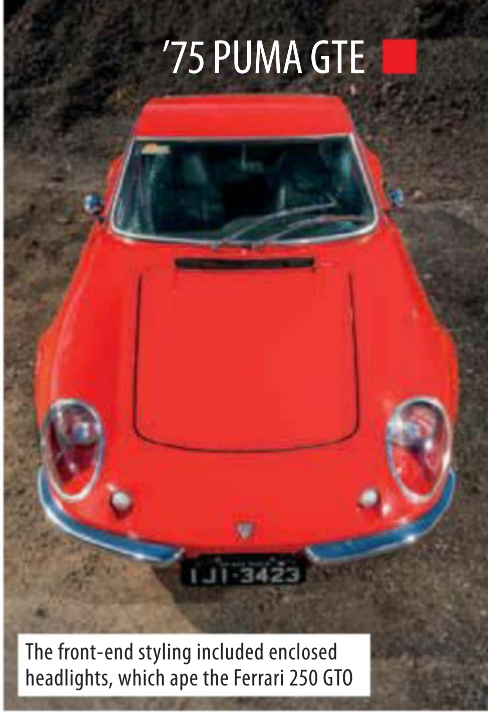
Success story

The Puma GT was made for just one year before being replaced with the new 1600 GTE Series 1 in 1969. The 'E' is said to have stood for Europe, as Puma was now focussed on the export market. The GTE had a 1600cc Type 1 engine with compression raised from 7.5:1 to 9:1 and twin Solex / Brosol carbs boosting output to a claimed 70bhp. As the car was around 250lbs lighter than a VW Beetle, this equated to fairly stout performance for its day with over 100mph on tap.

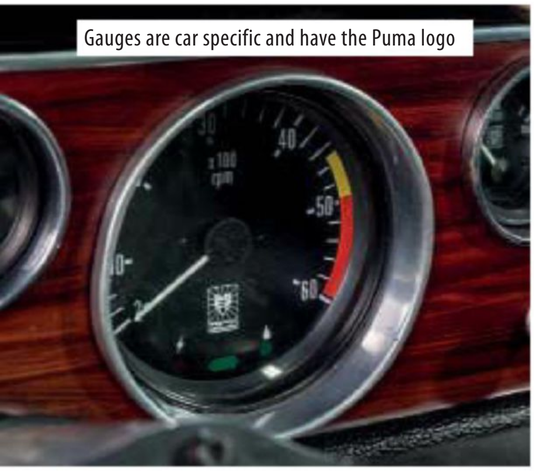
However, as the wheelbase was over 10 inches less than a Karmann Ghia (the chassis was shortened) the Puma GTE was a very small car, especially inside! Having always loved the look of the car, this came as a devastating shock when I tried to get into this car. Let's just say if you are anywhere near 6ft tall, you need not add driving a Puma GTE to your bucket list. I was floored at this revelation. Even after squeezing myself in I had to recline the seat to a virtually recumbent position and my knees were then above the level of the steering wheel. Worse still, your right foot has to go around the central bodywork into a nook where the accelerator



Don't let looks deceive you. The cabin area of the Puma GTE is very small due to the shortened wheelbase



The front-end styling included enclosed headlights, which ape the Ferrari 250 GTO



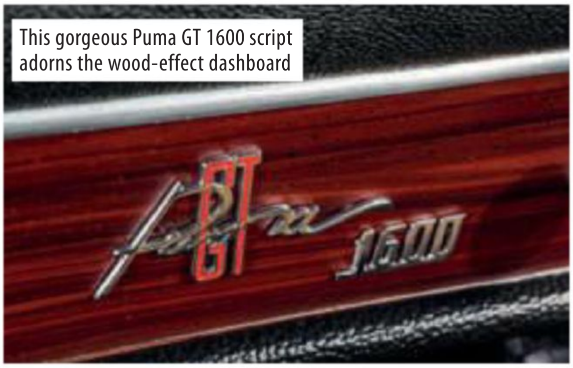
Gauges are car specific and have the Puma logo

BEHIND THE WHEEL

Mark told us, "If there's one area the Puma GTE fails in, it's the driving experience. Once you've folded yourself inside the tiny cabin you'll discover a steering wheel that's set towards the door and pedals that are offset towards the tunnel. Spending any amount of time in there will have you calling on the services of a chiropractor. It feels fast though, with 80kph feeling more like 80mph. It's a fabulous car if you can actually fit inside it." ■

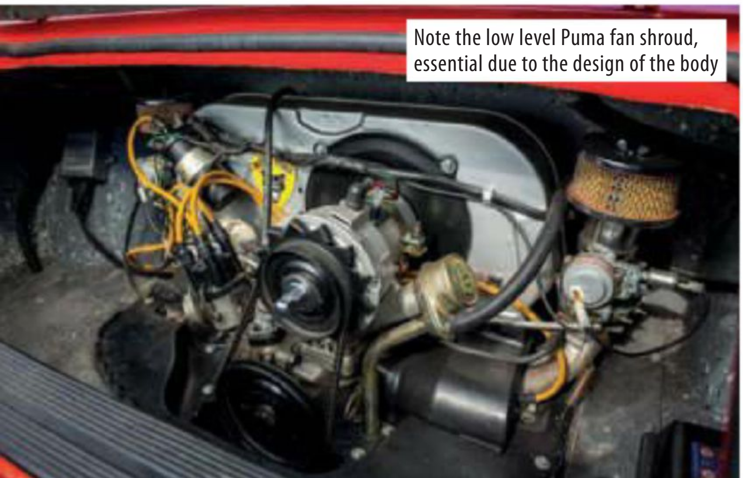
This 1975 car came with all the original paperwork

Behind the handbrake you'll find a GT Malzoni badge

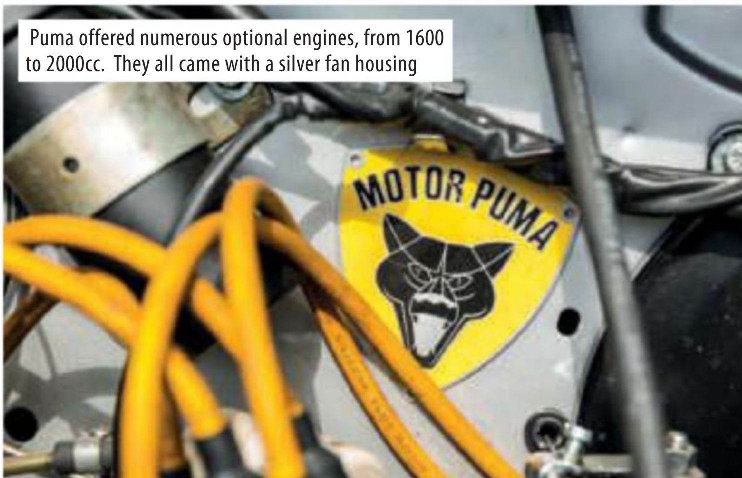


This gorgeous Puma GT 1600 script adorns the wood-effect dashboard

Formula 1 steering wheel is unique to the Puma



Note the low level Puma fan shroud, essential due to the design of the body



Puma offered numerous optional engines, from 1600 to 2000cc. They all came with a silver fan housing

Svelte lines make for a very pretty car, but is it just us or would the Puma have looked better on 15s? There certainly appears to be space for them

Zolotone finish was standard under the bonnet. Not much room for luggage here

is situated, and you then have to manoeuvre it out again to get to the brake pedal, which sits a lot higher. Not ideal, especially if you catch your foot on the underside of the brake pedal in the process.

As such, the Puma GTE is very much a case of form over function, which is sad. Could it have been made to work as well visually if scaled it up to fit the standard length VW chassis? We will never know.

> “The Puma GTE is very much a case of form over function”

High water mark

Although the Series 1 Puma GTE was sold in the UK, the example you see is the later, and perhaps best, model of all. It is one of just 1,583 cars built in 1975, marketed as Puma GTE Série 1A. This model was produced for three years from 1973 to 1976, the period viewed as the heyday for the marque in terms of styling, quality and specification. The later series Puma cars built after this date rapidly became less successful in terms of styling.

Cockpit doesn't look anything like a VW, though there are traces of Karmann Ghia in the wood-effect appliqué on the dash. Unlike a Ghia, though, driving position is diabolical!

Points of interest on this particular car are that it retains all the original Puma-specific components. It has all of the stylised Puma head logo'd parts, from the nose badge to center caps on the wheels and even the logo'd valve caps. The interior of a Puma GTE should include a ‘Formula 1’ three-spoke sports steering wheel with Puma horn button, Puma head gearshift knob and all of the gauges should have the Puma head logo. All of these elements are in place.

Obviously, the body of the Puma also has numerous specific parts, such as the two-piece bumpers, but even the window glass has etched Puma logos. The window trim and door frames are all in the kind of condition you would want them to be, especially as the window frames are prone to corrosion.

TECH INFO

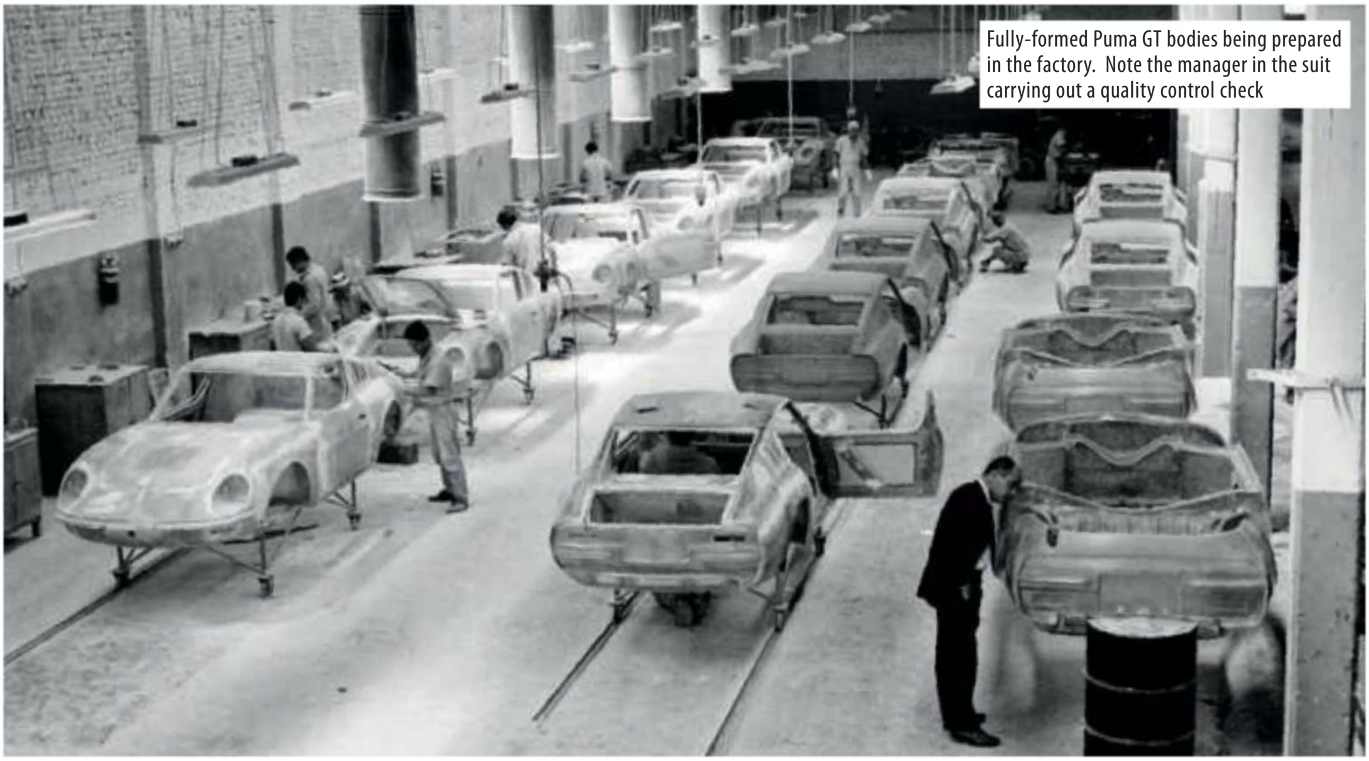
MODEL: 1975 Puma GTE 1600 Series 1A
ENGINE: VW Type 1 with twin 34mm Solex /Brosol carbs, 9.1:1 compression
POWER OUTPUT: 70bhp at 4,700rpm
TOP SPEED: 103mph
SUSPENSION: BallJoint Puma adjustable front beam; stock swing axle rear
BRAKES: VW Karmann Ghia front discs and rear drums
WHEELS: Puma 14 x 6in alloys with Puma logo centre caps
LENGTH: 3,960mm
WIDTH: 1,580mm
HEIGHT: 1160mm
WHEELBASE: 2,150mm
WEIGHT: 680kg

Fan club

Mechanically, as with the previous model, the 1975 Puma GTE 1600 came with a VW Type 1 engine spiced up with dual carbs but, due to the sloping rear bodywork, it also has Puma's own low-level doghouse fan housing without heater duct outlets. Indicentally, these fan housings are much sought after by the Cal Look brigade as they not only enhance the engine bay, but also sit lower than a pair of Weber 48IDAs on tall manifolds, which just looks plain cool.

Performance is respectable for a car built in 1975 and powered by a mildly tuned but essentially stock VW engine. With a twin-carbed 1600, the 680kg was sold as capable of 0-60mph in 9.9 seconds and a top speed of 103mph.

The styling of the Série 1a Puma GTE 1600 transcends the VW hobby as this is a car everyone seems drawn towards. We would like to thank Mark Reynolds of Just Kampers for finding this car in Brazil and shipping it to the UK so we could have it on display at The *VolksWorld* Show this year. Since then, it has been sold to a new owner, and I am happy to report it will remain in the UK. ■



Fully-formed Puma GT bodies being prepared in the factory. Note the manager in the suit carrying out a quality control check

Inside Puma

These fabulous photographs were taken in Brazil in 1968 and give a tremendous insight into how the VW Puma GT was manufactured

Words Ivan Mcutcheon **Photos** *VolksWorld* archive

Production of the new VW-based Puma GT, as created by the company's founder, Rino Malzoni, and designer, Anísio Campos, commenced in 1968. These photographs were therefore taken during the first year of manufacture at Puma's facility on Avenida Presidente Wilson, Vila Independencia, São Paulo. Sadly, today you will find no trace of the building as it was demolished in 2006, but through these photographs we are able to take a trip back in time.

Immediate success

From the moment the Brazilian public saw the Puma GT 1500 it stole their hearts. The clearly Italianate styling was something they had probably only seen in photographs or, if they were lucky, perhaps on one of the few hugely expensive imported cars only Brazil's wealthiest inhabitants could afford. The trouble is the list price of the Puma when new was 5,135 real. To put that into perspective, a Beetle in Brazil in 1968 would have set you back 2,600 real and a Karmann Ghia 3,910 real.

But Puma was not a high volume manufacturer. In the first year of production just 151 Puma GTs were built, and in 1969 production rose to 272 units.

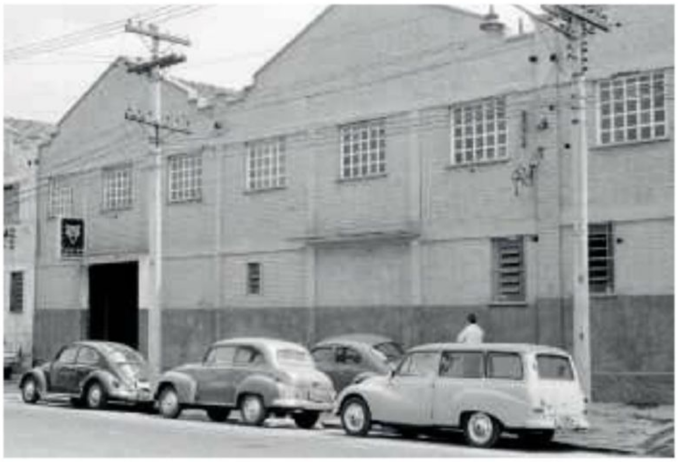
The body of the Puma was made from glass fibre, hand laid and moulded in house. The body was diminutive in every way. It was just 1.14m at the highest point – that's around seven and a half inches less than a Porsche 911. The wheelbase of 2150mm (84.64in) was 350mm (13.78in) shorter than that of the Karmann Ghia whose chassis it used. This equated to a cabin with space for just two occupants. The floorpan was shortened by Puma on delivery from VW, then built up to a rolling chassis with one the adjustable front beams Puma would become known for throughout the VW world. You've heard of a Puma beam, right?

Once the main bodyshell, doors, bonnet and engine lid were moulded and had passed quality control inspection, they were taken out of the factory building to cure outdoors on a steel rack.

The Puma GT was painted and trimmed in house and featured many components not found on any other VWs, including the gauges, glass, seats, 380mm steering wheel and sporty 14-inch alloy wheels.

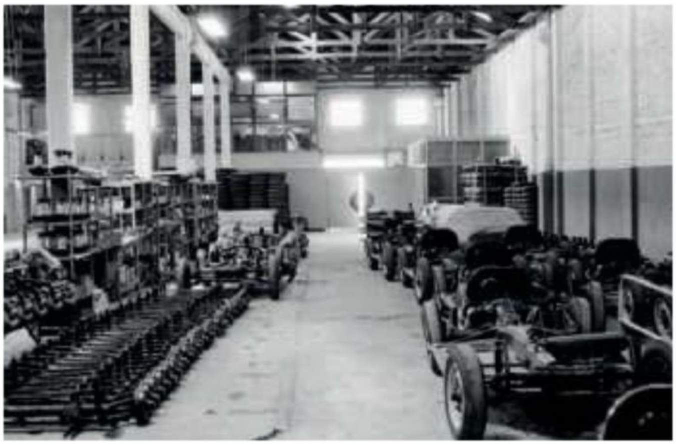
With its hefty price tag, the Puma needed to out perform the Karmann Ghia it was based on, so the 1493cc Type 1 engine was fitted with twin 32mm Solex carbs and an exhaust system allowing freer flow of gases. This allegedly upped the power from the original 44bhp to 60bhp, though we suspect that might have been an ambitious claim. Thanks to its lighter weight and more slippery shape, the Puma GT was able to reach a maximum speed of 91mph.

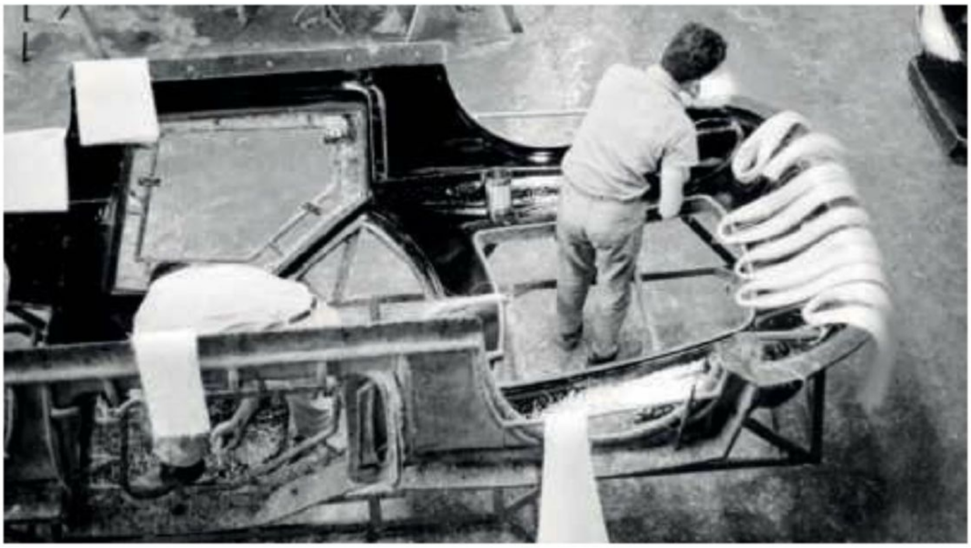
The Puma GT 1500s you see being built here were only made for one year before being replaced with a new model – the Puma GTE Series 1. ■



Outside the factory, the DKWs tell a story as this photograph was taken shortly after Puma moved from building DKW-based sports cars to VW-based Puma GTs

Link pin beams were bought from VW, but modified with 'Puma' adjusters to drop the ride height. Complete rolling Karmann Ghia chassis were shortened in house



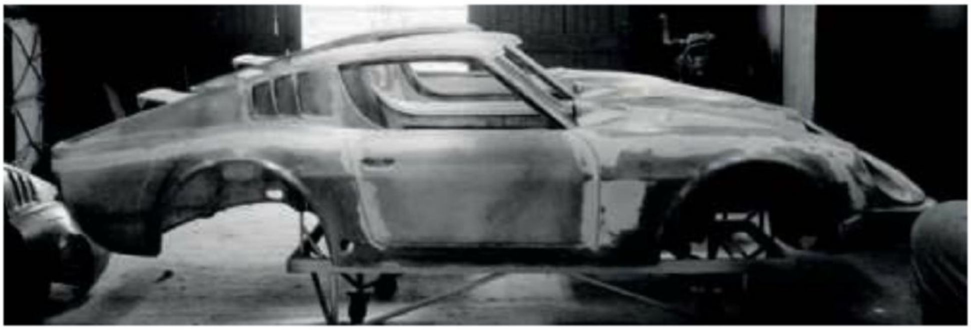


The inner body mould for the Puma GT. The main body was constructed in two pieces – an inner and outer shell, which were then mated together

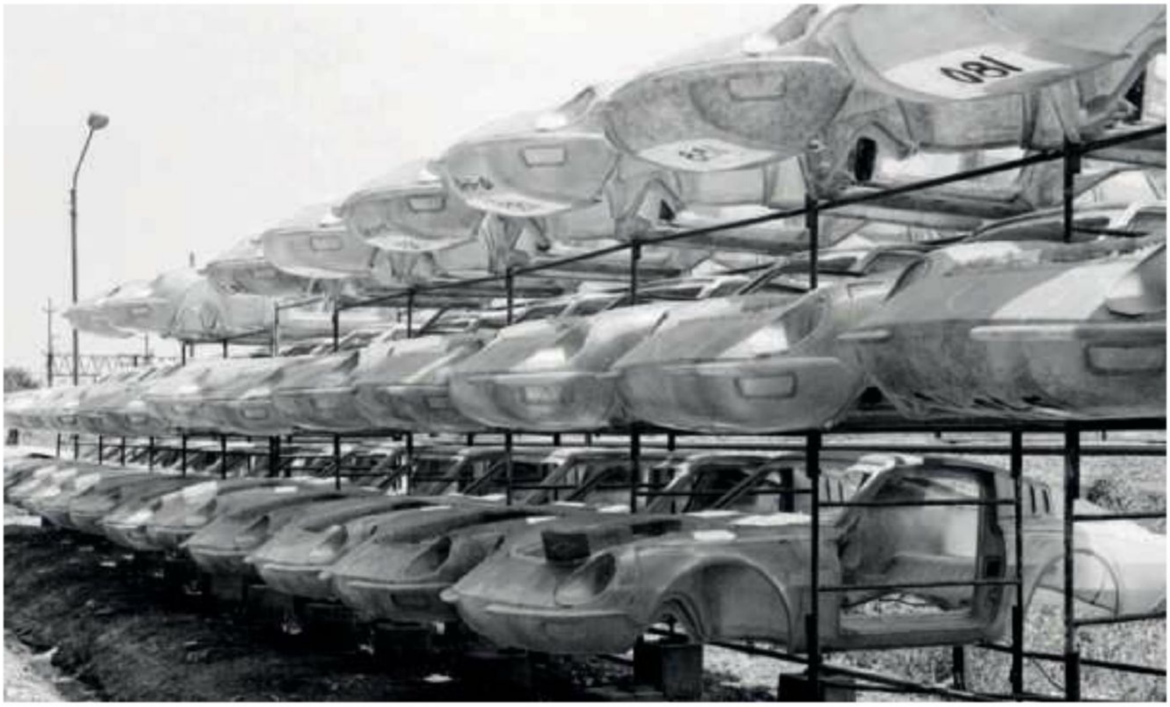
An employee can be seen here laying glass fibre into the body mould. What no H&S?

This shot shows a worker boring a hole into the c-post of the 'shell, while another worked just looks bored

Finishing off the inner 'shell structure in preparation for mating it to the outer 'shell

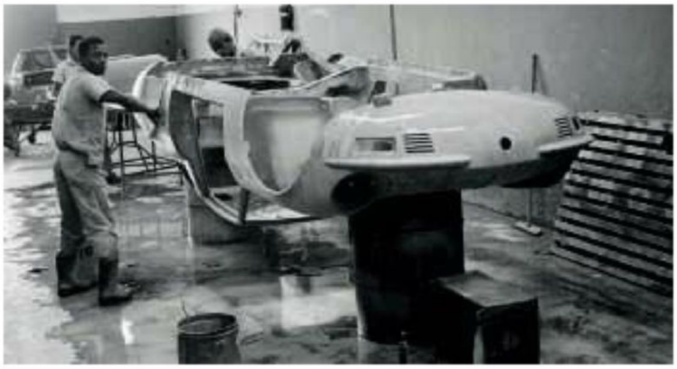


Now complete, the process of prepping the body for paint has begun

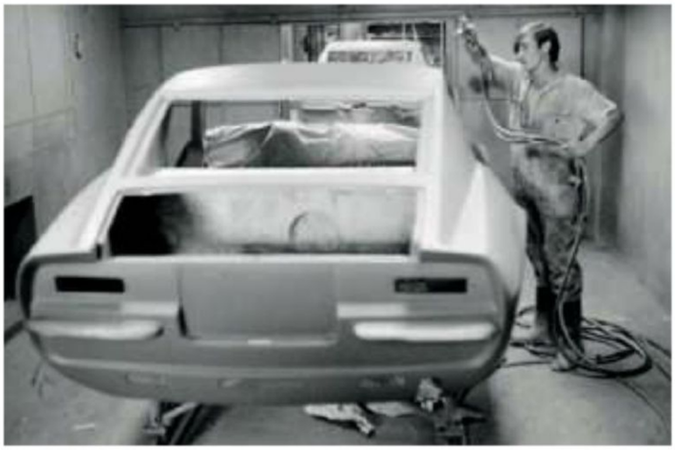


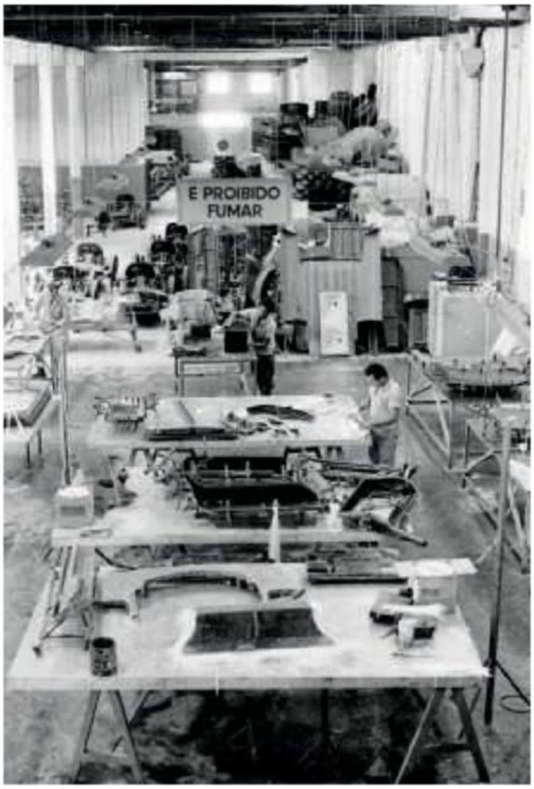
The steel racking outside the factory where as many as 30 bodies could be left to cure in the sun

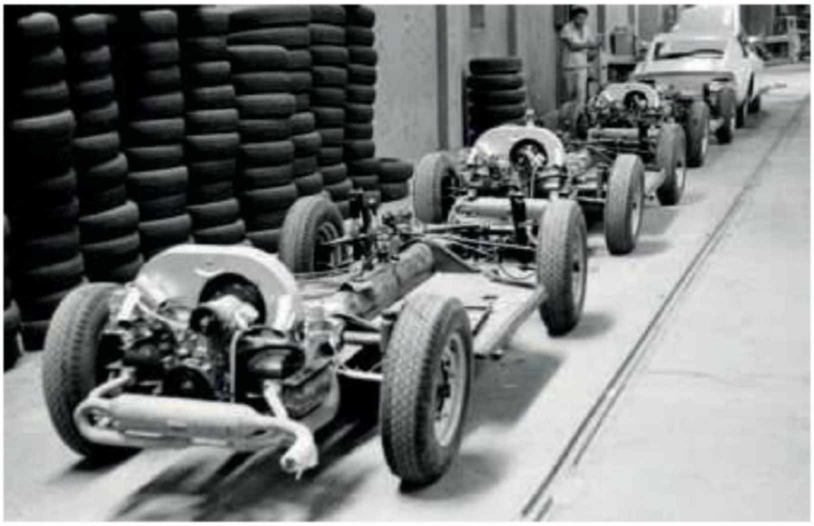
Preparing the body of the Puma GT for paint. Three people worked at a time on each 'shell



Unlike many glass fibre cars, the Puma did not rely on a gel coat for its colour, the bodies were primed and top coated like a steel car

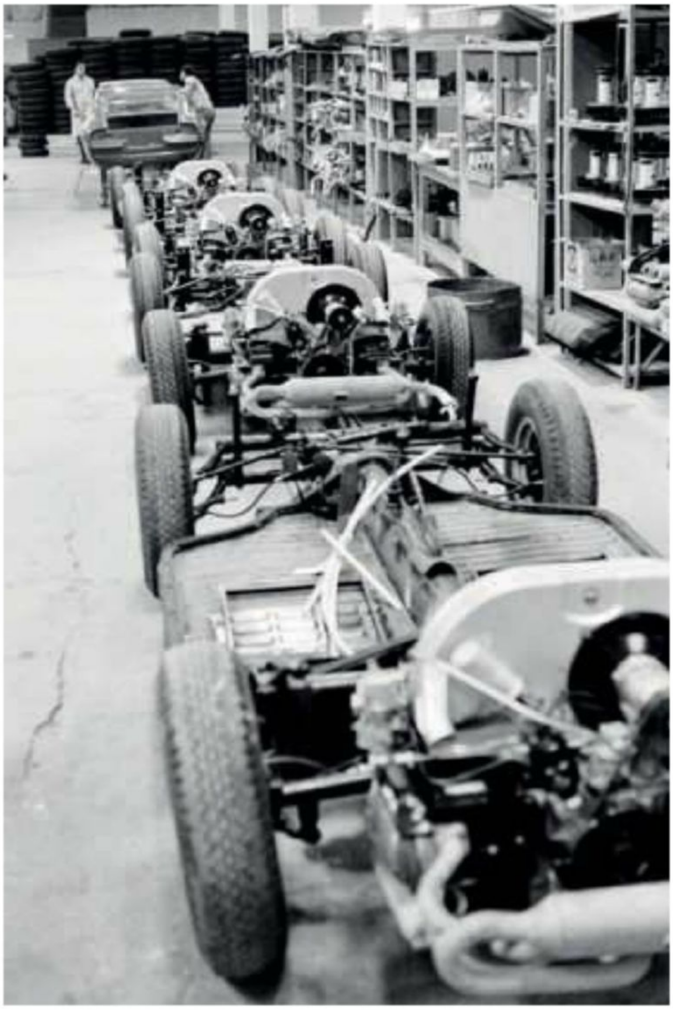






Overview of the area where the various substructures were being made

The VW chassis came with 15-inch wheels and tyres, but these were not used on the Pumas as they all had 14-inch alloy wheels. Note the Puma-specific exhaust and twin carbs are fitted here



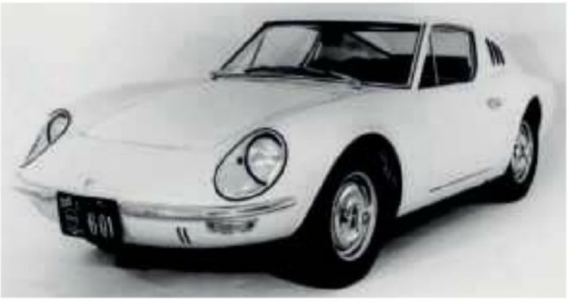
A line of shortened rolling chassis ready to be mated with the bodies. Note the supply of generator asemblies, tinware etc. on the racking alongside

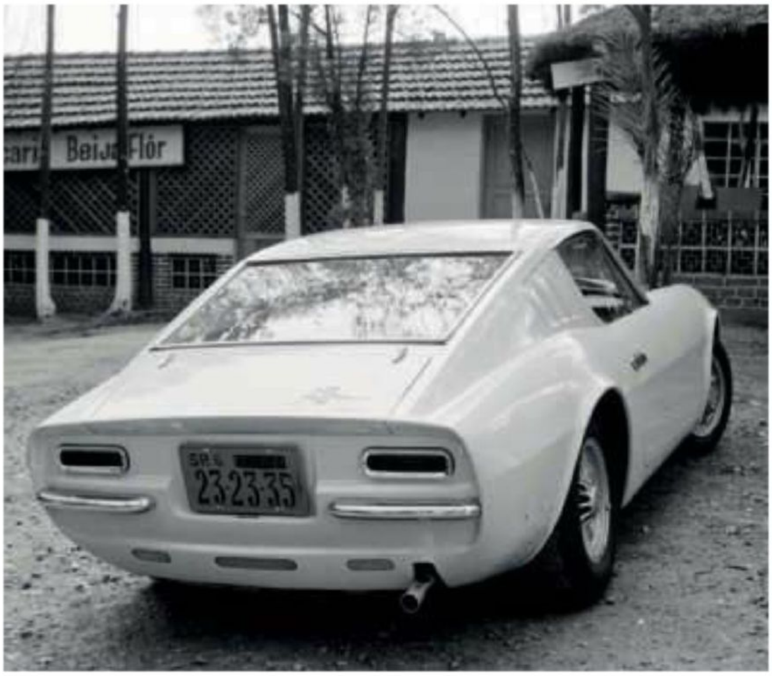
More tremendous lack of safety equipment as the guys in the paint shop put the finishing touches to a nearly completed Puma GTs

Getting closer to being a complete car at this stage

Final fitting. Note the grey flecked paint used under the bonnet

The completed Puma 1500 GT was a beautiful looking car





This particular model was made for just one year, but many more models of VW-based Pumas were offered. With the single exit tailpipe, there's very little to give away the VW origins is there?

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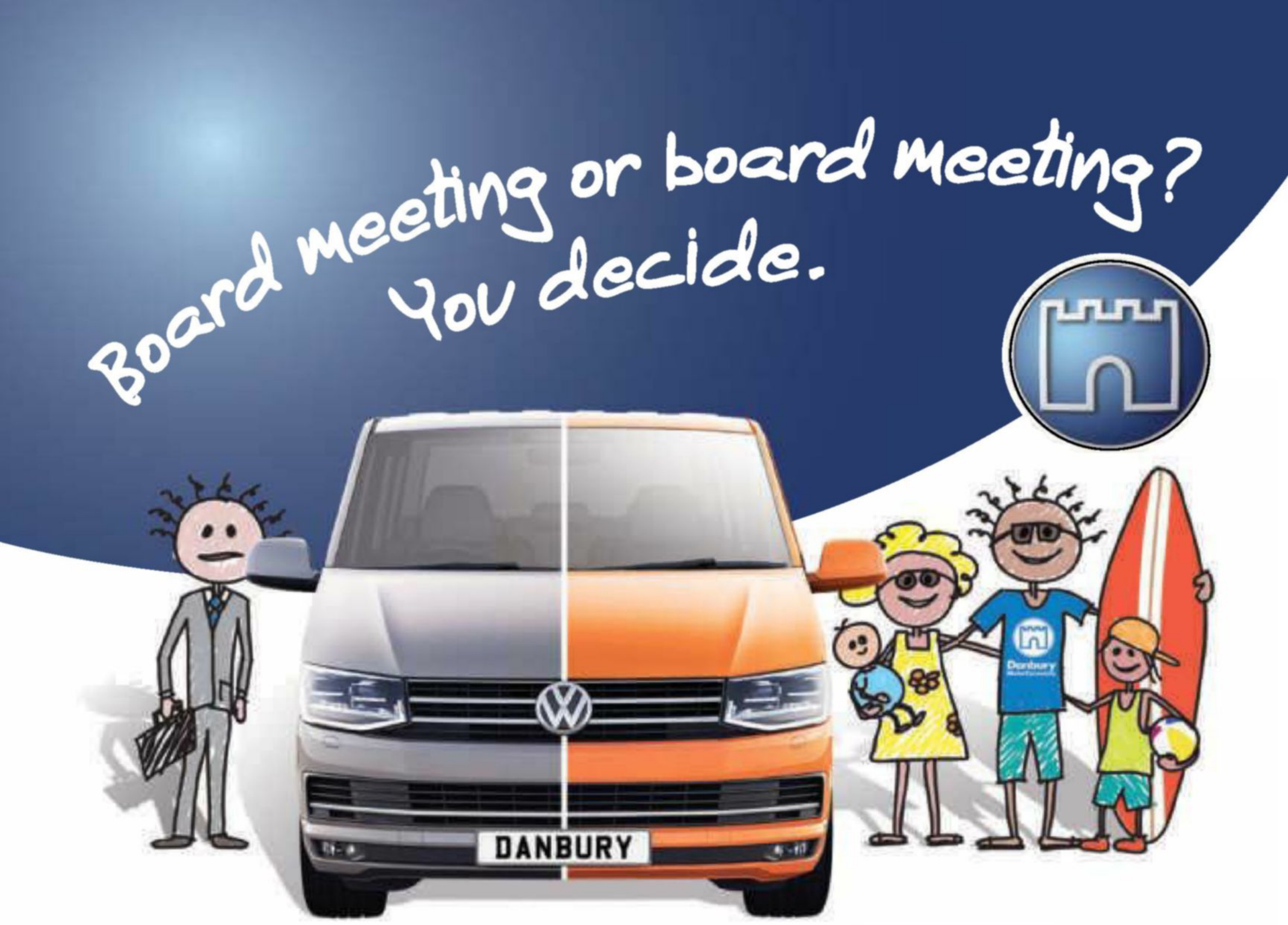
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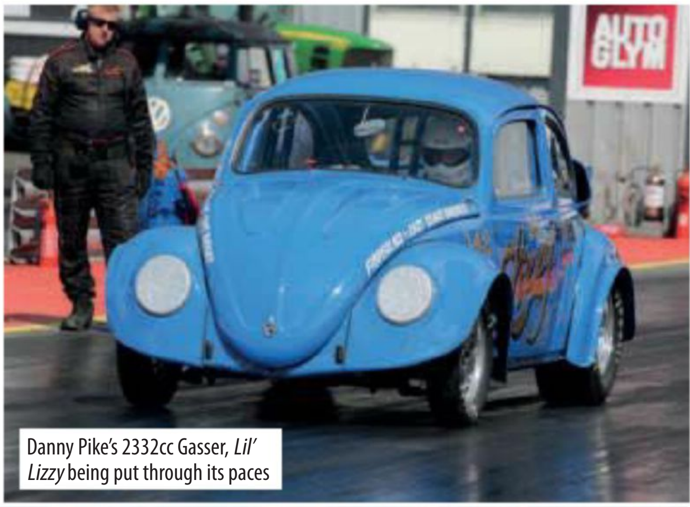
The National Motorhome Awards 2016

Going large at Santa Pod

VWs, funny cars and lots of music and laughs, we had a blinder in Northamptonshire. Here's why

Words James Peene **Photos** www.julianhunt.net



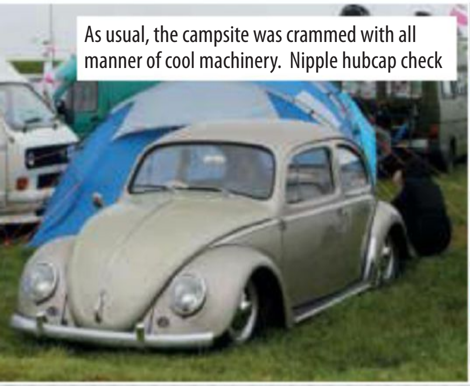
Danny Pike's 2332cc Gasser, *Lil' Lizzy* being put through its paces

There are loads of fabulous events held at Santa Pod, but I'm ashamed to say there are really only three I ever bother to attend. Each one revolves around Volkswagens being spanked up and down the quarter mile, and this one, the first VW-centric gathering of the year, The Big Bang, was held over the chilly weekend of April 22-24.

With a rust 'n' prime, show 'n' shine and loads of trackside action, cars are most definitely to the forefront at this show, as they should be at any car show, to be perfectly honest. And, let's face it, there are few better ways to while away an afternoon at a car show than sitting on a grass bank, beer in hand, watching some drag racing and getting Pod face.

As always, there's plenty of evening entertainment, too. Be there next year. ■

Custom, stock, Resto Cal, race… There was a car for everyone, wherever you turned at the Pod



As usual, the campsite was crammed with all manner of cool machinery. Nipple hubcap check

Rawspeed front-engined rail is just plain cool

Ramping it up. The BMX display always draws a crowd

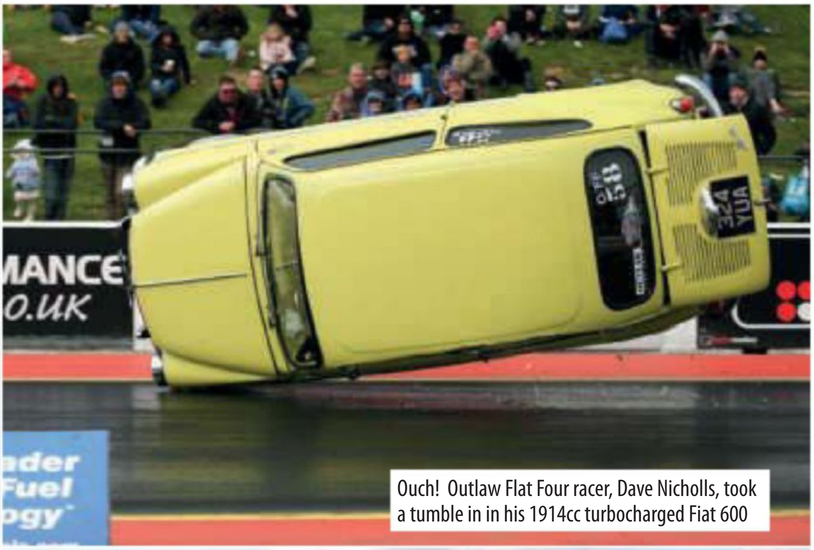
It was good to see Bernard Newbury back out giving his Gasser-style *Stitch Up* a spanking

This Thing had the spirit of air (according to the window sticker)

Lloyd Jackson's crotch cooler Split getting nods of approval from the RSPB

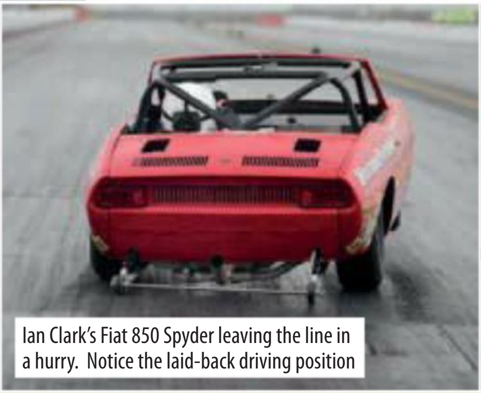
Everyone loves a Bug pulling a wheelie, and Lucas Dalglish always delivers

Freddie Lynch drove home with the trophy for Best Other Air-Cooled

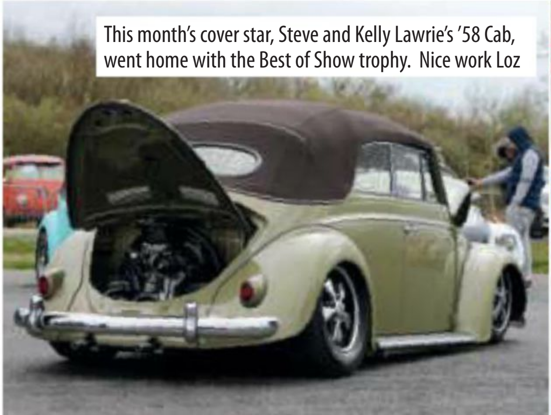

Ouch! Outlaw Flat Four racer, Dave Nicholls, took a tumble in in his 1914cc turbocharged Fiat 600

Dean Jones' '71 looks the business on those Fifteen52 Outlaw rims. No surprises it went home with the Best Bay award

With two live music areas, there's something for all tastes going on into the wee small hours


Ian Clark's Fiat 850 Spyder leaving the line in a hurry. Notice the laid-back driving position

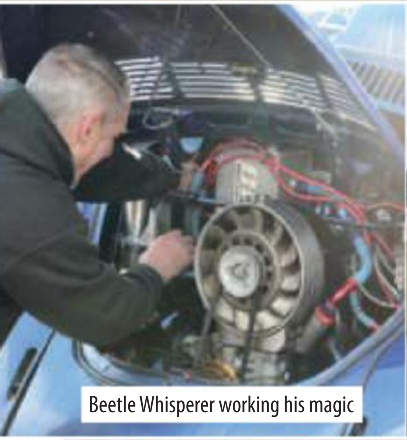
Trevor lighting up the tyres in his crazy raked Hot Wheels-inspired Split. We love this Bus


This month's cover star, Steve and Kelly Lawrie's '58 Cab, went home with the Best of Show trophy. Nice work Loz

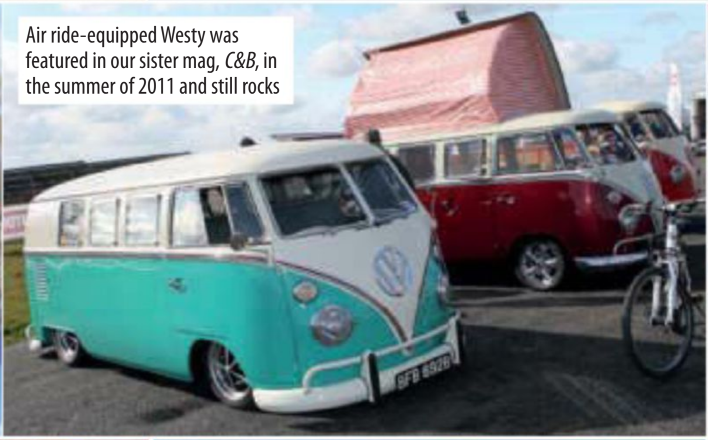
Natural High
Phil West's *Natural High* caught in a rare non-wheelie moment

Stock-width beam and sensible / useable ride height shocker! We bet this is a lovely Squareback to own, and drive

Neil Ellis was quickest in the air-cooled class with 13.28 at 96.73mph

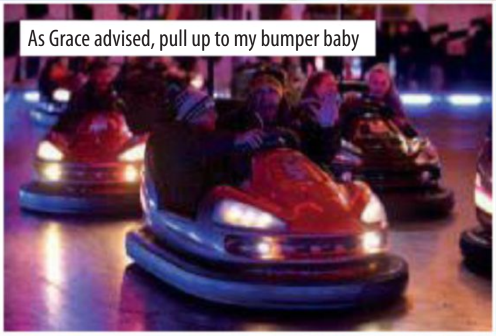


Beetle Whisperer working his magic



Air ride-equipped Westy was featured in our sister mag, *C&B*, in the summer of 2011 and still rocks

Show 'n' shine or rust 'n' prime, there are awards for all types at The Big Bang



As Grace advised, pull up to my bumper baby

All the fun of the fair at Santa Pod (sorry)

Best Van? Steve Whitehead's patina Panel

Rikki James' Dormobile looks tough on those Titanio Venus alloys. Number plate?

James Hillier's Viking ran an 18.02 at 70.18mph. Score

Gold Torkers and yellow headlights are a cool look

Outlaw Anglias put on a fabulous display. The *Flyin' Fyfer* is a beast of a car

Ian Shorrock's Holley-equipped turbo Bug runs in the 10s at over 120mph

A recent addition to the Outlaw Flat Four ranks, and another one who loves a power wheelie, Nigel Hull

Back dated '72/'3 with a steel sliding sunroof? Tell us otherwise

Phil Jarvis ran an 11.42 at 116.43mph in The Fire Bus for the new fastest Bus record. Although the way this record keeps changing hands, someone else may hold it by the time you reads this!

Dean Jones built this tough German Looker before the Bay on the previous spread

Dave Hall does stock height, too. Sick Single

1303s are popping up everywhere. Are they finally having their day?

Lets off road. Rail or Baja? Tough choice, and two tough looking cars

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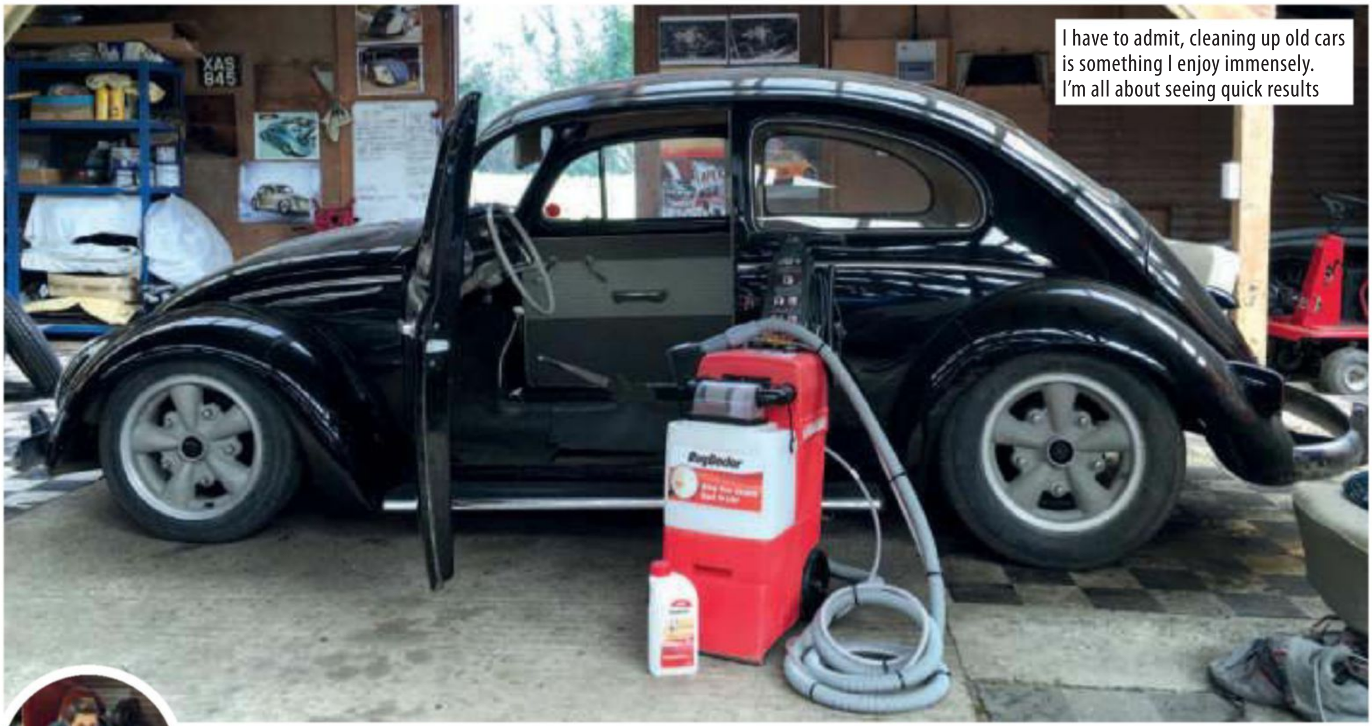


I have to admit, cleaning up old cars is something I enjoy immensely. I'm all about seeing quick results

OWNER INFO

NAME: James Peene

JOB: Editor

CAR: '60 Beetle

WORK THIS MONTH: Wait for the last few parts of the 12V puzzle to arrive and channel my inner Mrs. Mop

Suck it to me

It's a dirty job, but someone had to do it. James breaks out his Marigolds

I've been getting my clean on this month. Waiting for parts to arrive to complete the 12V conversion gave me time to turn my attention to a couple of things I've been itching to do, literally. But first, the electrics…

I'd bought everything I needed to double the '60's electric output, but I didn't have the final component to make the car actually run, the electronic ignition.

To my mind, if there's one upgrade that every VW owner should do, it's binning points and condensors and fitting a 'leccy ignition, so that's what I've done.

You'd be forgiven for thinking this would be as easy as buying one and fitting it, but you'd be wrong *compadre*. It's not quite as straightforward with a car of this vintage and, from all the research (that Steve did!), it turned out I needed a kit that would replace my two-piece, right-hand points, and none of the regular outlets listed one. Fortunately, we found Roy at www.Hot-Spark.com on thesamba.com and he was super helpful, not only selling me the right kit that would work with my particular dizzy, but also in explaining how I needed to grind down the corner of the vacuum advance mechanism so the magnet sleeve fits.

> “I called on the services of the Doctor”

Ordering parts like these from the States swallows up a bunch of time so, whilst all the things like the semaphores, lights, horn and whatever now worked, I couldn't actually run the car to hear what it sounded like through my new Abarth-style exhaust. I've always lusted after these bad boys and they're the only non-factory exhaust I'd ever fit to a Beetle, so there.

With the electronic ignition on the way, I popped to my local Tescos and

What a difference a spot of high-pressure water makes. Thank you Mr. Kärcher, I owe you one

Original carpets and mats now look as good as new. They smell nice too, but the car hasn't lost that old car character

Yes, that's 57-year-old cloth upholstery in there. Nice, isn't it?

hired a RugDoctor for a couple of days.

My car may have sat in a museum for a number of years, but there's no accounting for quite how filthy it was. The whole interior smelt dusty, the cloth seats felt gritty and every time I patted the headliner dust would billow out.

Most people hire a RugDoctor for cleaning carpets and sofas in their house, but I reasoned it would work a treat on /in my '60. It would also earn me Clubcard points, and every little helps.

Inside out

I started by removing the seats from the car, and carefully extracting the original rubber floor mats. Once I'd vacuumed out as much dust as I could, I called on services of the Doctor. If you've never used one, the RugDoctor is simplicity itself: fill the tank with water, add some cleaning solution and pull the trigger. Pulling the trigger fires a jet of cleaning solution at whatever you point the nozzle at, while letting off the trigger sucks it back up again. Simples.

I went over all of the seats and carpets and can't believe how much better they now look, but the car still retains that funky old VW smell I love.

If the interior was dirty, it was nothing compared to the inner wings and floorpan. I *thought* the underside had been coated in super-thick underseal, and having scraped and cleaned the self-same gubbins off my old Penny Pincher with petrol, I wasn't looking forward to repeating the job on the '60.

Fortunately, before I did that, I decided to try jet washing it. Bingo stingo, every last trace of it simply blasted off! It wasn't underseal at all, just years and years of thick, disgusting dirt. I have no idea how it got like that, but I do know the car would have rotted in next to no time had I driven it in the wet like that. And I have to say, blasting all the filth off the inner wings was one of the most satisfying jobs I've ever done on a Volkswagen. Just look at the inner wings now, they're magnificent, and make me happy.

More next time, I think… ■

Vacuum advance mechanism had to be modified to work with the Hot-Spark electronic ignition

Abarth-style four-tip exhaust looks great, but I'm still waiting to hear what it sounds like

VOLKS WORLD PROJECT CARS

On track

Owner: Steve Gosling
Cars: '61 ragtop, '67 Ghia, '70 Bay Window
This month: I managed to get back on the '61 and make some (small) progress. I've finally picked my driving height and set the tracking. The to-do list is getting shorter

Remember me?

Owner: Ivan McCutcheon
Cars: '67 Beetle
This month: I am so happy to be able to say the engine is finally back in my '67. It should be MoT'd by the time you read this, and I will be absolutely stoked!

Breaking cover

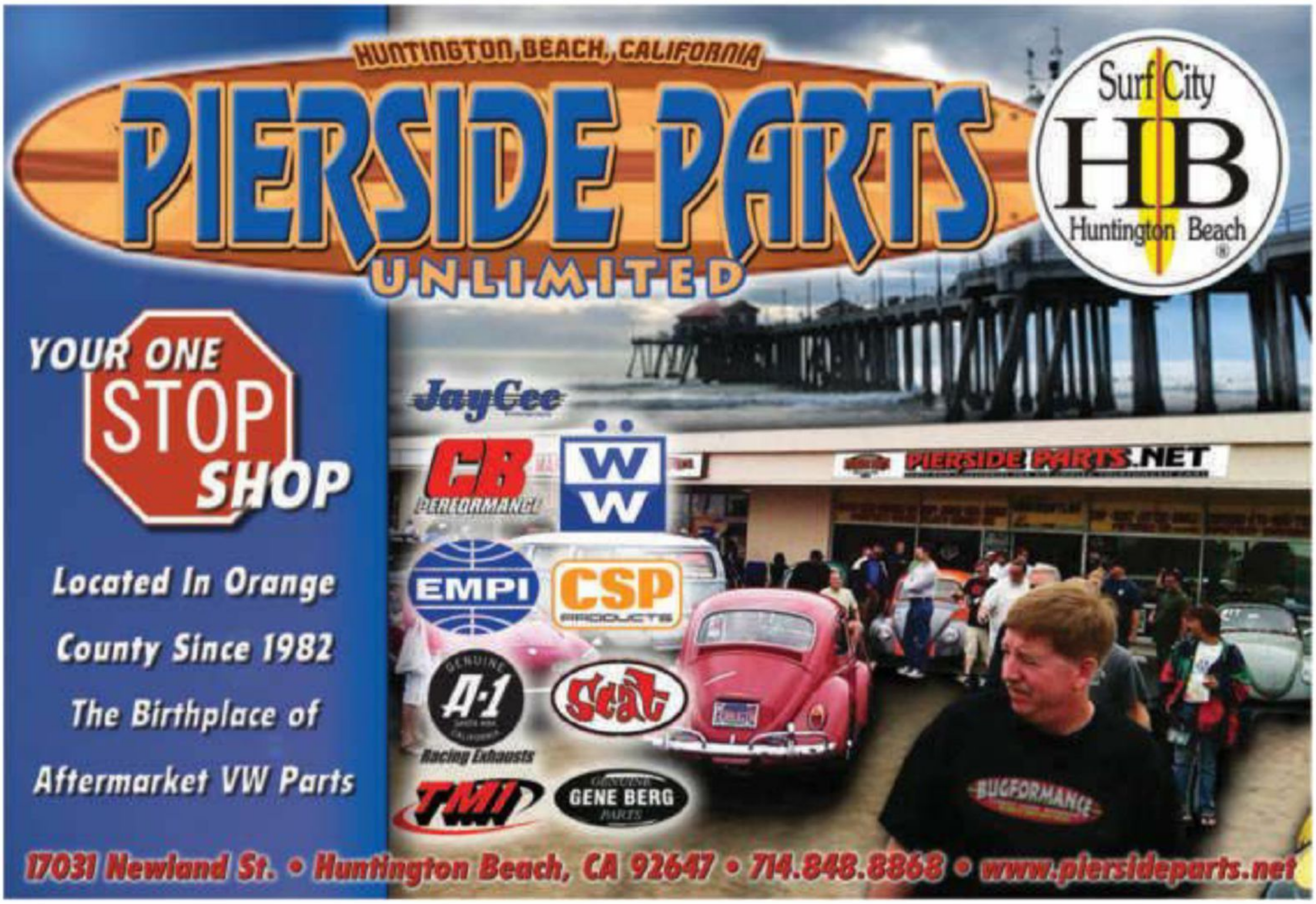
Owner: Cathal O'Toole
Cars: '77 Cal Look Beetle, GT Beetle, '75 Beetle, '73 Bay
This month: With the good weather finally here, I broke my '75 Beetle out of winter storage and cleaned the Bay for its first camping trip

Beach cruiser

Owner: Mark Walker
Car: '68 Beetle, '67 Beetle
This month: I finished the 12V conversion on my white '67 and got it back on the road, just in time for a weekend of BBQs at the beach

Seal of approval

Owner: Gordie Woollacott
Car: '73 Westy
This month: Taking a Bay windscreen out is always a lottery, but this time my numbers came in – surface rust only. Hurrah! That dash will be coming out for a blast and paint



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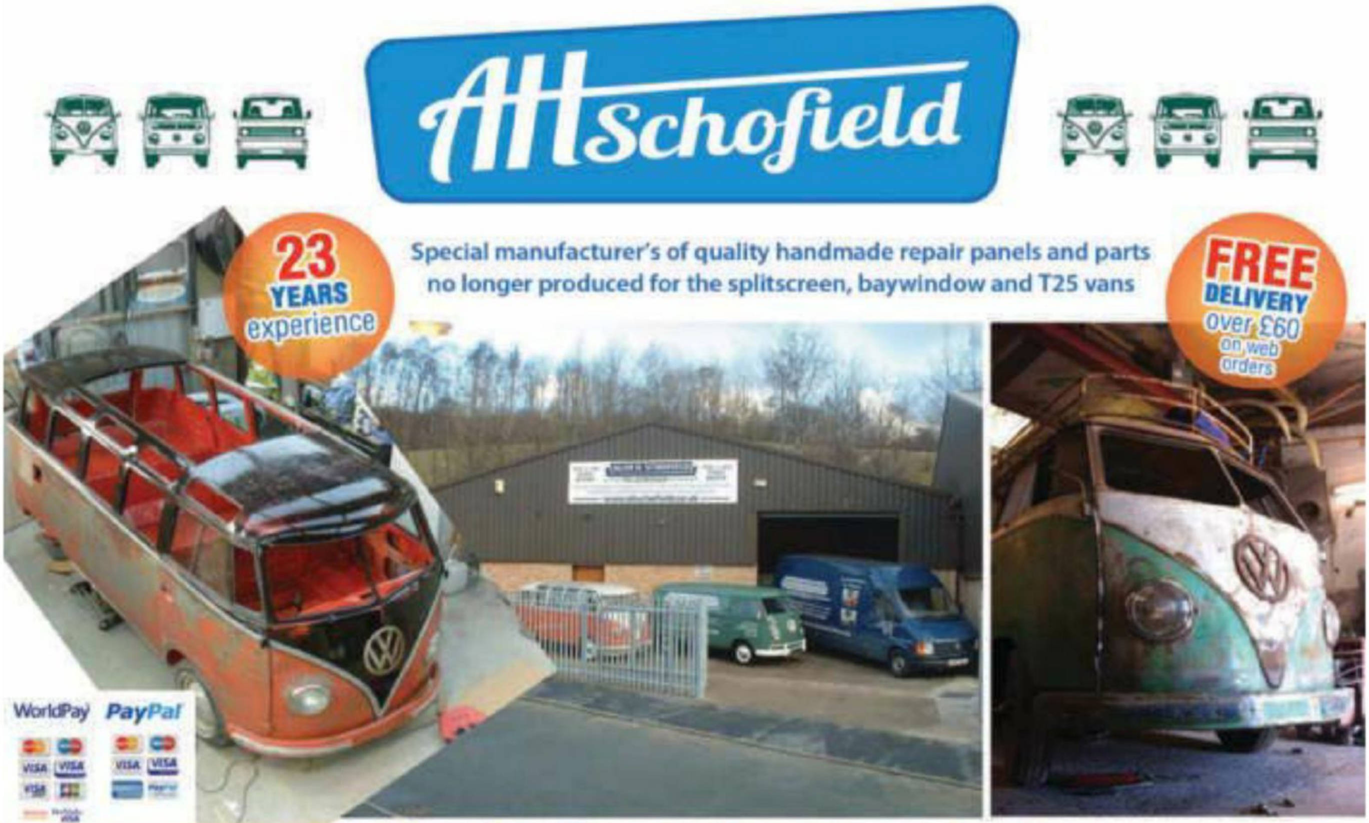

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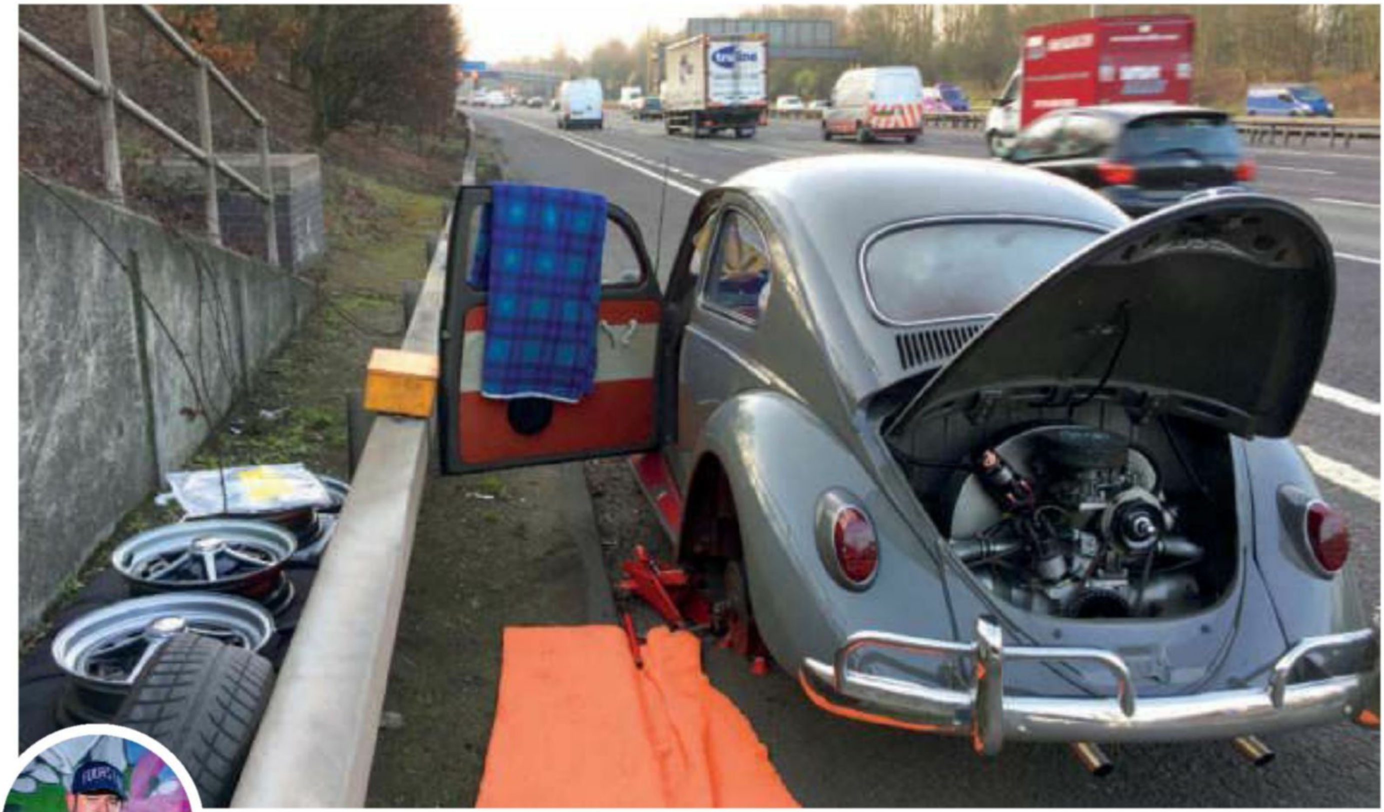

Roadside assistant

Well, that didn't go quite according to plan…

OWNER INFO

NAME: Jon Robinson-Pratt

OCCUPATION: Photographer

CAR: '64 Bug

WORK THIS MONTH: Give the Bug a service, then break down on my way to Sandown, but fix it and still arrive on time!

But luckily I was prepared! I finished my last report on the eve of setting out in the '64 to The *VolksWorld* Show at Sandown Park. The plan was to leave at 2am with my Bug full of camera gear and overnight baggage, along with a set of South African Sprints I had sold to fund my tattoo addiction and a myriad tools and spare parts squirreled away in every nook and cranny in order to arrive on site around 7-8am on set-up Friday to do a day's work shooting some of the show cars for forthcoming features. The car was running lovely, having fitted a new set of plugs and a Flame Thrower coil. I also fitted a new 'top quality' fuel pump as the old unit was tired. I think it finishes the engine off nicely, though it needed a minor bit of clearancing to fit under the progressive carb inlet manifold.

The air ride repairs appeared to have been a success and the car happily goes up and down and up and down. Yes, it creaks a little, but it's stronger and safer now and I have much more confidence in it. I'd even re-set the fuel gauge to give an accurate reading, not the needle reading half with a full tank as it has for the last nine months. What could possibly go wrong?

Well, nothing, for most of the trip. The Bug cruised quite happily at 60 along the A303 (I didn't want to push it too hard because I wanted to get there in one piece). Admittedly, it was freezing cold, the windscreen wouldn't stay clear for more than a couple of minutes and I couldn't see a great deal because one headlamp kept flicking on and off, which in turn made the indicators work intermittently, and I couldn't hear the stereo over the drone of the engine. But then that's what air-cooled ownership is all about, right?

I zoomed past Stonehenge at 4.30am, stopped for a coffee, met an empty M3 and pulled into Fleet services for the brekkie stop I'd been looking forward to since I left. I was nearly at my destination, without incident. Happy days. I had my usual stress of finding the right lane to take me southbound on the M25, negotiated the sweeping bend with the increasing rush hour traffic and then, 200 yards down the M25…

Thrower
Coil
IT'S HOT.
Flame Thrower
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> In an unusual bit of preventative maintenance I replaced the old not-so-blue coil with a new Flame Thrower

And the gnarly old fuel pump with a nice shiny new one from GSF

Bang! The accelerator cable snapped. Bugger. Somehow, I coasted across two lanes of traffic and a filter lane with no power, no hazard warning lights and no indicators and came to rest on the hard shoulder. Phew! So I sat cursing for a few minutes, and then thought about my predicament for a couple more. I had two options – AA recovery, which could take half a day, or fix it myself. I've never had the pleasure of replacing a throttle cable on a Bug and didn't really want to pop my cherry, as it were, on the hard shoulder of the M25 at rush hour. But I needed to be at the show as soon as possible as I had work lined up and people counting on me. Now, I know you aren't supposed to repair cars on the hard shoulder, and I wouldn't encourage anyone to do it. If the cable had to be accessed from the motorway side of the car, I wouldn't even consider it, but the cable access panel is on the nearside so, with hazard triangle set up and hi-vis vest adorned, I set to work.

Luckily (I have just realised this is a word I use a lot in relation to my VWs) two days previous I had purchased a new cable from GSF because I just had 'this funny feeling', and I always carry a trolley jack and an axle stand. Obviously, the cable and tools were stowed under the back seat, with everything else on top, so this all had to be decanted onto the hard shoulder before work could commence. However, once that was done, I was quite surprised how easily the old cable came out and the new one fed in. It took a while to get it into the fan shroud tube, and it was only just long enough to reach the carb, but I got there in the end and, an hour and a half later, I was back up and running. Result! Or so I thought…

It required a little bit of clearancing to fit with the alternator, but that's all

> “with hazard triangle set up and hi-vis vest adorned, I set to work”

Noooo! I now had no clutch pedal! By this time, Steve Gosling had rung to see where I'd got to. As nice as it was to speak to him, he didn't help matters when he said that if the clutch cable had come off the pedal assembly my day was about to get a lot worse. I wasn't going to accept failure as my fate though so, after a little detective work, I discovered the cause of the problem. I'd taken the pedal assembly bolts out and hadn't put them back in, meaning the assembly had shifted enough to make the clutch cable just slack enough not to work. I twisted the assembly back into place, re-fitted the bolts and was back on my way.

I arrived safe and sound at Sandown at 9.30am, albeit with some over revving due to the cable being a bit short, but I got there, I fixed the car myself and I had an awesome weekend! I shot three amazing Ovals, which you will see on these pages in due course. I also ticked one 'bucket list' entry – showing a car at Sandown Park – and it received some great comments and feedback and I got to spend time with some awesome people. You know who you are!

So, a happy ending? Not exactly. The trip home also didn't quite go to plan, but that's a report for another day. ■

I've always wanted to show a car at Sandown, and now I have. I was in good company too, alongside Jimbo from *VWt*'s awesome Mk1 Golf

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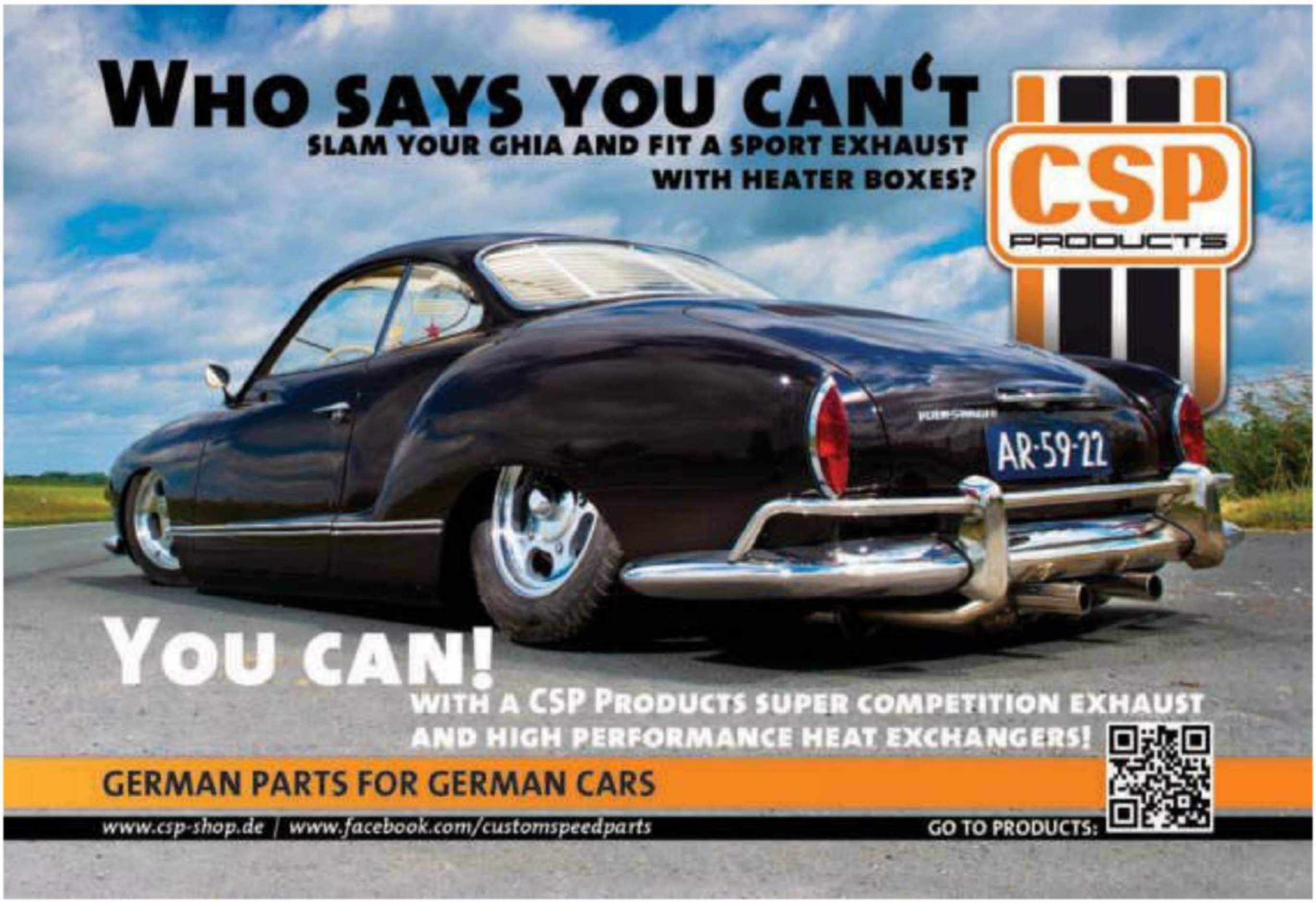
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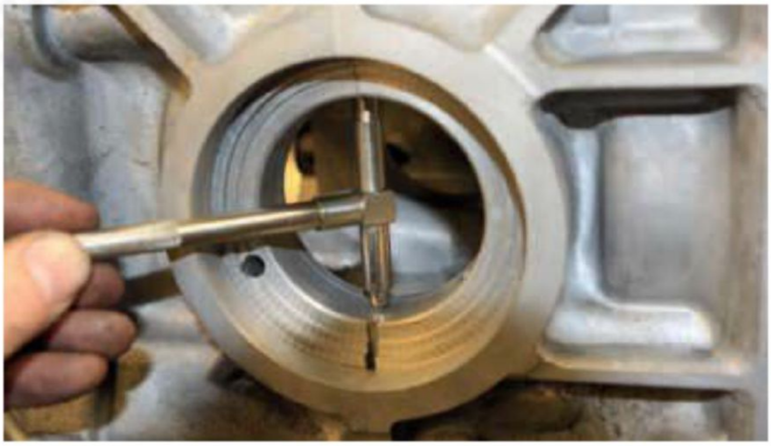
Words and photos Lawrence Butcher



Using a telescopic gauge to check the main bearing bores. Using these gauges is an acquired knack, but it's easy after a little bit of practice

To many people, building a high-performance, air-cooled VW engine can seem like a daunting task. Internet forums are full to bursting with the dos and don'ts and a plethora of horror stories of what happens when things go wrong. However, provided you are happy to invest a good chunk of patience, refuse to cut corners and, where necessary, make sure you have the correct tools and equipment, building a reliable, powerful VW engine is well within the capabilities of most home mechanics. After all, the humble VW engine is a simple beast and, compared to many engines, has relatively few parts. In fact, I'd go so far as to say bolting one together is pretty straightforward. The devil, as they say, is in the detail. Specifically, making sure all the parts within the engine are able to work in harmony with one another.

The intention of this series of articles is to provide you with the knowledge required to take a bundle of parts and turn them into an engine that will then stay together and provide many miles of reliable service. For the purposes of these features, we will concentrate on one specific engine build, but the principles and practices covered can be transferred to any engine, from a stocker to a stroked monster. Each area of the engine will be discussed in detail. We will then look at practical matters of assembly, as well as a little of the theory behind why certain parts are chosen and the role they play in the big picture of an engine's operation.

Before we delve into any specifics though, it is pertinent to take a look at some of the basics of performance engine building, which hold true whether you are building an F1 car or a Cal Looker.

Making power

The basic principle of making horsepower from an engine is to get the biggest possible bang from the fuel and air that enters the combustion chamber. This process can be broken down into two areas.

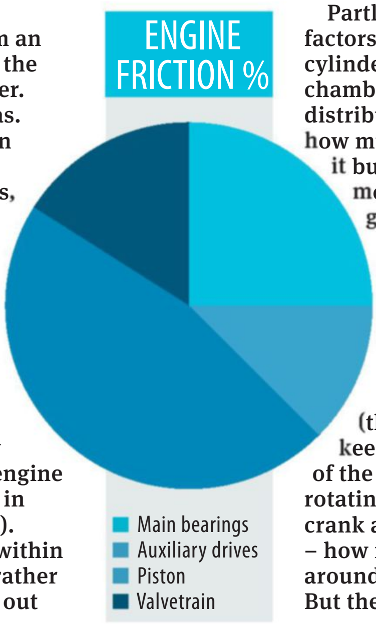
Firstly, the more fuel and air (charge) you can squeeze into the combustion chamber on each firing stroke (if you're not sure what this means, look at the sidebar explaining the four-stroke combustion process), and burn efficiently, the bigger the bang. This is where increasing the capacity, working on the airflow through the engine and increasing the safe operating rpm, all come into play. The majority of modified engine parts, be they big valve cylinder heads, stroked cranks or high lift cams are produced to help achieve that aim. Either through providing the capability to flow more air / fuel mix or reinforcing areas of the engine that start to suffer when subject to an increase in load (the inevitable result of most tuning work).

Secondly, the more of the energy contained within the fuel that can be converted to useful work, rather than lost as heat, noise or simply unburnt fuel out of the exhaust, the more power an engine will make. This second point is particularly important, and is the reason why two seemingly identical engines can make wildly differing power figures.

It may come as a surprise to some, but getting the best possible power out of an engine is all about efficiency. Efficiency? I hear you say, but I want power, not economy. The thing is, the principles that can be used to make a car deliver better fuel mileage can also be used to improve power. Looking at a naturally aspirated engine (one that does not use a turbo or a supercharger), there is always going to be a finite amount of fuel and air mixture that can be sucked into the combustion chamber. Getting the most from an engine is all about maximising the energy available from a given amount of charge. Essentially, making sure you burn as much of the fuel as possible, releasing the chemical energy held within it.

Partly, this is down to a host of highly complex factors related to the way the charge enters the cylinder and behaves once it is in the combustion chamber. The way the incoming charge is distributed within the combustion chamber, and how much fuel and air is there, will affect the way it burns at the point of ignition. The better and more completely the fuel is burnt, yep, you guessed it, the bigger the bang. Combustion chamber shape and charge preparation (the term for what happens to the charge on its way into the cylinder) is outside of the scope of this article. Suffice to say, serious engine tuners spend untold hours on the dyno trying to find ways of optimising it.

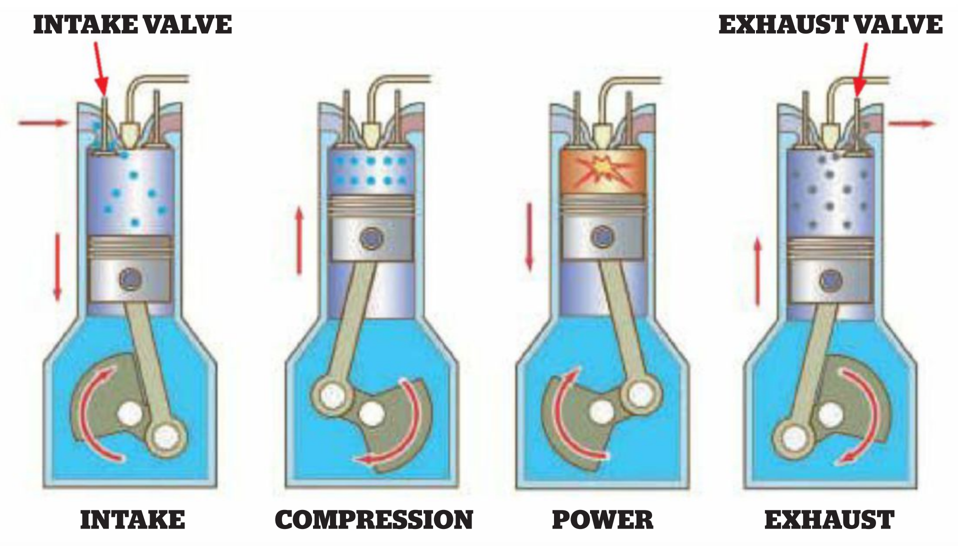
The second part of the efficiency puzzle (there are way more than two parts, but we will keep it simple here) is the mechanical efficiency of the engine. Imagine the forces in an engine rotating at 7,000rpm. In an engine with an 82mm crank and a 5.5-inch long rod, the mean piston speed – how fast it is moving up and down the bore – will around 19.1 metres per second, or about 42mph. But the direction of travel of that piston is being



reversed 7,000 times every minute. It is essentially being stopped dead, then dragged backwards again every time the crank rotates. The forces of all four pistons are directed through the crankshaft, trying to twist and flex it. At the same time, the camshaft is forcing the valves open and closed, again, with every part pushing against the other, causing bits such as the pushrods to deflect.

All of this violent action creates friction, which in turn creates heat. Friction saps power, and the more resistance there is to parts moving, the more energy from each bang is spent simply trying to move the parts in the engine, rather than turning the wheels. This friction is often quantified under the term ‘frictional losses’. By minimising these losses, the amount of useable power from the engine is increased. It is here that attention to detail by the engine builder can make a real difference.

4-STROKE ENGINE CYCLE EXPLAINED



What is blueprinting?

Thinking about this battle against friction, one of the most important considerations when building any engine is ensuring all the parts are within the correct tolerances. This process is what is known as blueprinting. A tolerance is the acceptable deviation in dimension from ‘factory’ specification. So, for example, the main bearing bores on a late VW crankcase are a nominal 65mm in diameter. The tolerance for the bores is specified as +0.02mm, so the bore can be up to 65.02mm in diameter, but not less than 65mm.

By ensuring all the parts are within tolerance, you will build a smoother running engine. For some parts, the tolerance is vital to ensure reliability. If the bearings are too tight in the bores, for example, they will have very high friction as there will be insufficient space for an oil film between the crank journals and the bearing shell. This will lead to heat build up and the bearing seizing. Even a couple of hundredths of a mm too tight can lead to a seizure. Even if the engine doesn’t seize, bearing wear will be high and the increased friction will rob power and result in higher oil temperatures (remember, friction = heat).

> “Increased friction will rob power”

Similarly, if the bearing bores are too large, a number of problems can arise. The bearing shells are designed to have a degree of ‘crush’, meaning that when they are inserted and the case torqued up, they compress slightly, holding them firmly in the case. The bearings are sized with this crush in mind, so that when they are fitted into the bores and the case tightened, they crush exactly the right amount. Provided the bearing bores are the right size in the first place. If they are too big, the bearing will not crush and will not be held securely in place. It will also increase the clearance between the crank journal and the bearing surface, which again increases wear.

Beyond making sure the various bores are all the correct size, blueprinting also involves making sure all the relevant parts of the engine line up with each other as precisely as possible. A good example of this is the relationship between the crank centreline and the cylinders. Looking from the top of the engine, the angle between the centreline of the crank and the cylinder bores should be exactly 90 degrees. If it is not exactly 90 degrees, the crank will not push the pistons directly up the bores, it will be trying to push them into the side of the bores. Once again, this will increase friction and rob power.

But how can the crank not be central to the bores you ask? When the crankcase is first made, the bearing bores are simply rough cast holes, requiring machining to reach the finely surfaced finish you see when the case is split. If the boring bar that is used to cut the bearing is not exactly parallel to the case split (and thus exactly 90 degrees to the cylinders), the bearing saddles will be cut at a slight angle to the cylinders and, as a consequence, the pistons will not be pushed squarely up the bores. It is important to note that having the bearings bored off centre is not the same as their being out of square. It is very common for bearings to sit further into one case half than the other, and this is not a major issue. If the offset is more than a few tenths of mm, then it may need to be accounted for later in the engine build as it will mean the deck height on one side of the engine is slightly less than the other. This is where what is known as ‘tolerance stack’ can become an issue. Say, for example, the bearing saddles are bored 0.02mm off centre, this would mean a reduction in deck height on one side of the engine of the same amount from the ‘theoretical’ correct figure. However, if one then adds in a con rod that’s centre-to-centre distance (the length from the middle of the big end bearing to the middle of the little end) is 0.01mm longer than it should be, and a piston whose crown height (the distance from the centre of the piston pin bore to the top of the crown) is 0.02mm greater than it should be, you actually end up with a reduction in deck height of 0.05mm, which is enough to have a noticeable effect of compression ratio. Or worse, remove the necessary clearance between the open valves and the piston at top dead centre (TDC).

In the old days, before there were readily

A 0-100mm set of micrometres will measure everything needed on a VW engine. This set cost £100

A depth micrometre, telescopic gauges or a dial bore gauge are also useful

TOOLS

- Set of micrometres, metric or imperial, 0-75mm or 0-3in
- Depth micrometer, 0-150mm ideally, but 0-25mm will suffice
- Telescoping bore gauges or dial bore gauge
- Engineer's straight edge
- Precision ground dowels (for measuring bearing bores, crank dowel and lifter will suffice)

Optional:
- Height gauge
- Surface plate
- Dial indicator

Sources for metrology tools: eBay, Amazon, RDG Tools, Machine-DRO.co.uk

available supplies of aftermarket performance parts, engines were built on stock underpinnings, blueprinting was the process by which an engine builder would go through piles of parts to find those that best matched the required tolerances. So, they would take several sets of con rods and mix them until they had the closest they could to a matched set. Alternatively, in the case of the example above, find a rod that was exactly the right amount shorter or longer to counter the offset of the bore in the block.

The engine builders that construct motors for series such as Formula Vee, which specify the use of standard parts, still work very much in this fashion. However, for the home builder, purchasing vast piles of parts to find the perfect combination is not really an option. Instead, the approach to be taken is to check every part going into an engine and, where possible, modify it if it is not within tolerance. It may still be necessary to swap one set of parts for another if they are too far out of whack.

> "Close attention to detail, not thickness of wallet, defines a well built engine"

It is close attention to detail, rather than the thickness of your wallet, that defines what is a well built engine and what is not. Though there is no substitute for experience, the home engine builder can, with a little bit of effort, put together a properly blueprinted VW motor. It does not matter if you are building a 1641cc of a 2.0-litre plus stroker, ensure the basic specs are correct and the end result will be a smoother running engine and, ultimately, more power.

The starting point for this process is the crankcase. If this, the foundation of any engine, is not up to scratch, it does not matter how may shiny hi-po parts you bolt in or on, the end result will still be flawed.

Tools and preparation

In the second part of this feature, we will look at which measurements you need to take and why you need to take them. First, though, it is necessary to know what tools to use, and how to use them.

In order to properly measure a crankcase, and most other parts of the engine for that matter, you need some basic precision measuring tools. Acquiring these does necessitate a certain financial outlay but, even if you are only ever going to build a few engines, it is worthwhile. First up is set of good quality micrometres. The set shown above is from UK maker Moore and Wright and cost £100, with a range from 0-100mm (sufficient to measure most pistons). Next, a bore gauge or set of snap gauges (a good used bore gauge can be had for £60) to measure the internal bores. Again, the ability to measure up to 100mm allows the cylinder bores to be checked. You will also need a depth micrometre to check the bearing saddle halves and latter, to measure deck height. This used Mitutoyo tool was purchased for £20 at an autojumble in good working order. A dial gauge and holder is also an invaluable addition, and £30-50 will buy a good quality metric one, capable of measuring to 0.01mm. This will be used for a host of jobs, including checking TDC and crank end float. Finally, a good engineers straight edge, which is a precision ground steel rule, also comes in handy. Optional, but not essential, is a surface plate, which is a precision ground flat surface (one large enough to accept a case half can be had for around £100) and a height vernier. My used one cost £50.

You also need to know how to use each of the tools. This will be covered to a degree in this feature, but it pays to do some research on the correct means of using each tool. All are simple in theory, but it takes practice to be able to obtain consistent measurements. One has to remember that the measurements in question are incredibly small – 0.01mm is less than the thickness of a human hair – so cleanliness is king, as even a small film of oil or a spec of dust can be enough to create an incorrect measurement. Always ensure the parts you are measuring and the measuring tool are spotless.

Also, remember that temperature can affect the size of parts. Metal contracts and expands, so on a warm summer day something like a crank journal will be a different size to a cold winter night. It is only a small difference but enough to be noticeable. Even the heat of your hand can affect things, which is why micrometres often have plastic pads on their body to isolate them from your body heat. To find out more about using measuring tools correctly, YouTube is a great source of instructional videos.

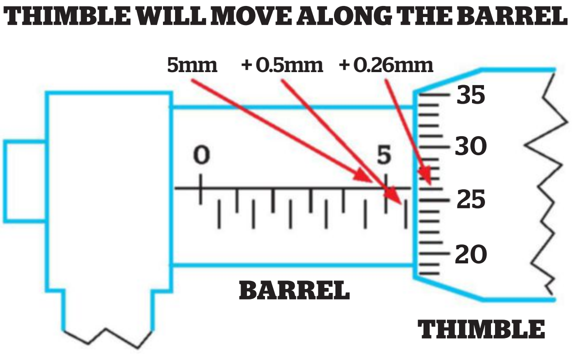
Using a micrometre

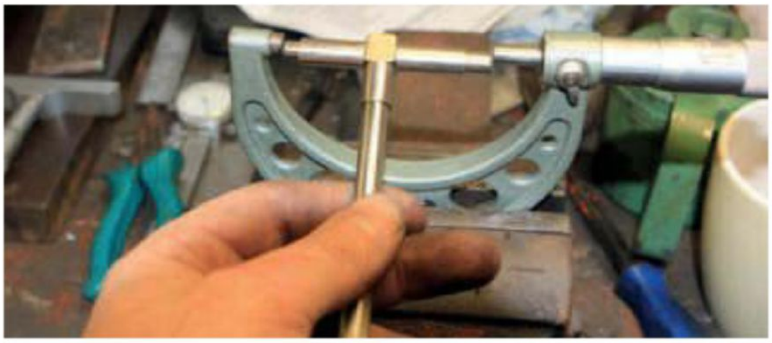
Unless you are very flush, you will invariably have bought an analogue set of micrometres. While there are cheap digital sets available, they will only have

The micrometre set will come with gauge blocks for checking accuracy. This mic is reading 0.005mm over

Mark the accuracy of each mic on a piece of masking tape on the body

USING A MICROMETER





Use a micrometre to measure the final size of telescoping gauges, but be careful not to move the arms

the quality of a similarly priced set of analogue units.

To start with, a quick description of how a micrometre (mic) works. A standard mic will feature a body with a fixed anvil at one end and a moveable anvil at the other. This moveable anvil is controlled by a fine screw thread, which moves the anvil in or out a precise amount each turn. Gradations on the mic body and the barrel allow for the degree of movement to be recorded. Metric mics are generally graduated to 0.01mm while imperial mics will read to 1/1000 or 1/10,000 of an inch.

Most mics will have some sort of ratchet device on the thimble, this is to ensure you apply the same turning torque every time a measurement is taken. It is surprisingly easy to remove a few tenths of a mm from a measurement simply by turning the barrel too hard. The micrometres illustrated here have a ratchet on the barrel, which I find easier to use than those with a thimble ratchet on the end of the barrel.

The illustration shows how you read a metric mic. Start by reading the mm off (the upper scale shows whole mm, the lower 0.5 gradations). The barrel of the mic is calibrated to read 0.5mm for every full turn and is broken down into 0.01mm gradations. So, in this illustration, the barrel is past the 5.5mm mark, with a reading of 0.26 on the barrel, making the total measurement 5.5mm + 0.26mm = 5.76mm.

Another important factor to consider when dealing with absolute measurements is how accurate your measuring tools actually are. Here, the important difference between accuracy and repeatability needs to be remembered. Accuracy is the ability for a tool to measure actual size, repeatability is the ability to achieve that accuracy with every measurement. Repeatability is down to the quality of the tool, the accuracy can normally be adjusted. For this reason, a micrometre set will come with a set of precisely sized gauge blocks for checking accuracy.

Use these gauges just like you would measuring any other part. In the above picture, the reading on the mic (which should be exactly 25.00mm) is actually 25.005 mm, over reading by 5/1000 of a mm. This difference therefore needs to be accounted for in any measurements that are taken. If necessary, write this difference on a small piece of tape stuck to the frame. It is good practice to check the accuracy every so often to make sure it hasn't shifted due to knocks and bumps.

Using telescope gauges

Another tool that takes a little bit of practice to use properly is the telescoping bore gauge, but once mastered you will be able to take quick and repeatable readings of any bores. The tool works on the basis of a pair of spring loaded rods that are restrained by a screw mechanism and which, when placed inside a bore, can be used to precisely measure the diameter.

To use the telescope gauge, place the tool into the bore to be measured and make sure it is centrally located, then loosen the locking screw to allow the rods to extend. The gauge needs to be placed just off vertical so the rods are effectively slightly longer than the diameter of the bore. You then need to lightly tighten the locking screw so the rods are fixed in place, but can still be moved with a light pressure. Now, pivot the gauge through the bore taking it past vertical, which will have the effect of slightly pushing in the rods to the exact diameter of the bore. Remove the gauge and fully tighten the locking screw. Now use an external mic to measure the distance between the tips of the gauge, being careful not to over tighten the mic and move the rods. It is best to take the same measurement several times to be able to take an average of each reading, which will also give an idea of how good your technique is. As with everything, practice makes perfect.

Hopefully by now you should have a good understanding of what blueprinting is, and the tools needed to properly check an engine for tolerance. Next month we will start taking some measurements and checking everything is to spec. ■

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Solex 28PCI overhaul

Stripping down and cleaning a stock 30-horse carb

Words and photos Lawrence Butcher

It is often the case that running issues with an engine can be traced to either problems with ignition or fuelling. In the case of Editor James' 1959 1200cc Beetle, the car refused to tick over, but ran quite happily under normal conditions. The fuel system on a 1200 is not exactly complex, so attention quickly turned to the carb, once all of the various joints in the inlet had been checked for air leaks (using a spray of easy start). A lack of stable tick over can very often be traced to an air leak, as air coming into the inlet manifold after the carburettor leads to a lean mixture, which is masked under normal running by the much larger volume of air being drawn through the throttle. As it turned out, despite thinking we had eliminated all air leaks, this eventually turned out not to be the case.

Before we get to that though, we decided to give the carb a good once over, cleaning it and checking the condition of the various parts. Stripping a standard Solex is straightforward, but it is worth remembering that cleanliness is king. Carbs have many tiny tubes and passageways, any of which can be easily blocked by the smallest speck of dirt. ■

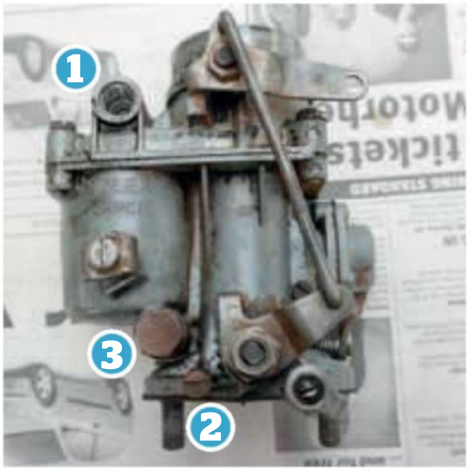
JOB INFO

TOOLS NEEDED: Various spanners, screwdrivers etc. needle-nose pliers, air line or other compressed air source

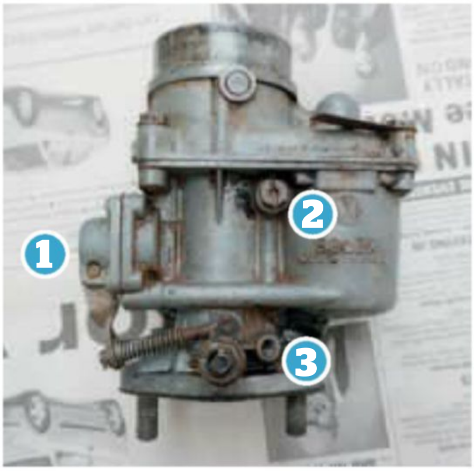
MATERIALS NEEDED: Carb cleaner (or petrol), Loctite

TIME TAKEN: 30mins

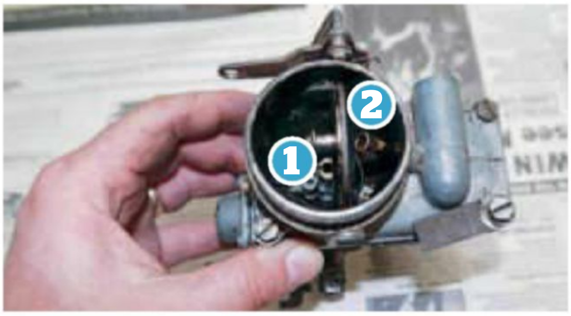
COST : £20 for gasket kit



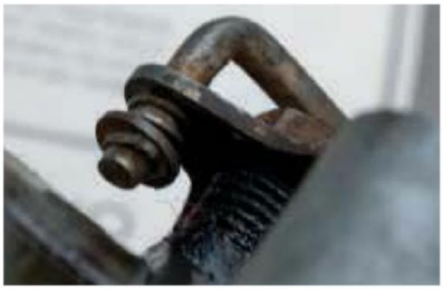
01 Here is the dinky Solex 28PCI carb the 1200 engine comes equipped with. This unit has a manual choke rather than an electronic unit so is as simple as they come. From this view, one can see the main fuel supply inlet (1), the air bypass adjuster screw (2) and the main jet carrier plug (3). The rod running between the two butterflies controls the choke via a cable that runs back to the dashboard



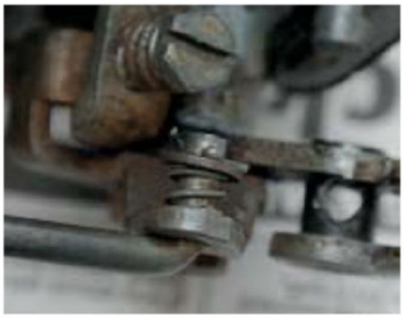
02 Looking at the other side of the carb, one will find the accelerator pump cover, (1), which squirts a bit of extra fuel in when you floor the gas, the pump jet (2), which meters this fuel delivery, and the vacuum take off for the distributor (3)



03 Looking in the top of the carb, one can see down to the butterfly, past the venturi and the air-correct jet stack and emulsion tube (1). The top butterfly (2) is the choke and features a small-spring loaded disc to allow air past the butterfly during starting. The choke has the effect of enriching the mixture until the engine reaches operating temperature

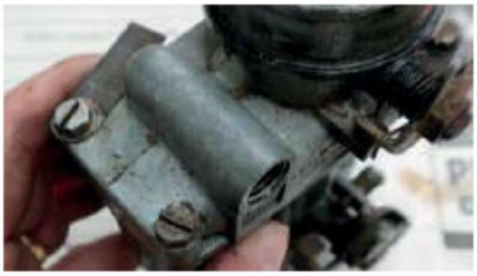


04 The first job is to remove the choke operating linkage, which involves pulling out the small split pin retaining the linkage rod. These are fiendishly small, so be careful not to lose them

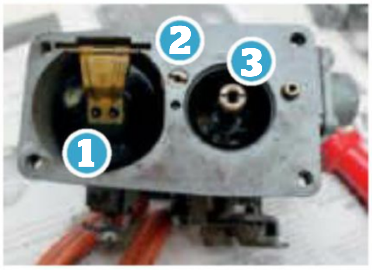


05 A similar clip attaches the bottom of the linkage rod. Once this is removed the linkage can be taken off the carb

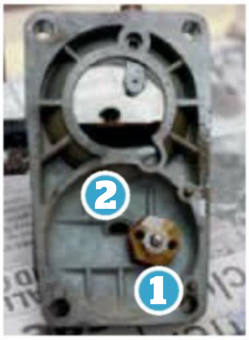
06 With the choke linkage removed, the throttle arms can be separated from the main shafts after loosening the securing nuts. Make a note of the order they are fitted in



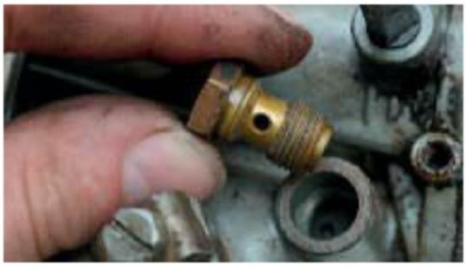
07 Now it is time to pop the top off the carb. It is secured by four flat-head screws, be careful not to round them out



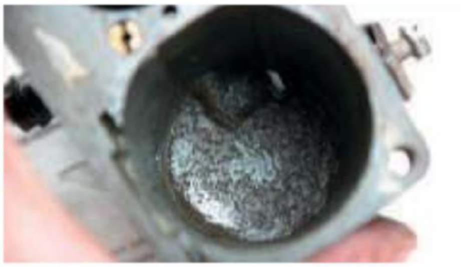
08 With the top removed, the float and float chamber is exposed (1) along with the pilot jet air bleed (2) and the air corrector jet and emulsion tube stack (3). This stack can be removed, but has a tendency to break, so we opted to leave it in place



09 Inside the top plate, one has the needle valve (1), which controls the flow of fuel into the float chamber. When the fuel level reaches the correct height, the float pushes against the valve shutting off the flow. Also visible is the float chamber vent, which exits into the throttle body (2)

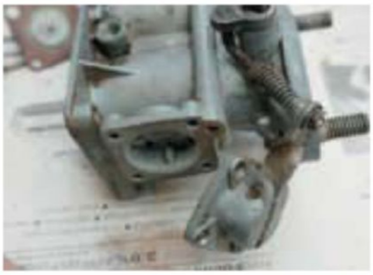


10 Removing the main jet carrier, it is clear there is a lot of gunk built up inside the carb, which will be doing it no favours at all



11 These deposits at the bottom of the float chamber all need to be cleaned out

12 The source of our poor tickover was wear in the throttle shaft. Air leaking past the shaft led to a lean mixture. The solution is either bush the shaft or buy a reconditioned carb that has already been bushed. Check the play by wiggling the shaft up and down and in and out. It should have minimal movement, but there was noticeable slop in this one. We re-assembled and re-fitted the carb and, when the shaft was sprayed with easy start, the engine rpm changed, indicating an air leak

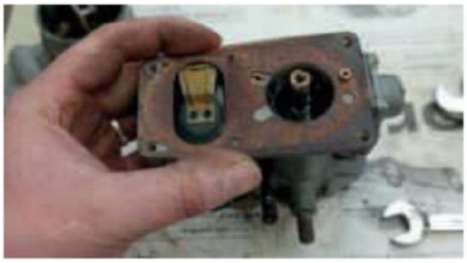


13 With the carb almost totally dismantled, the accelerator pump can be removed. It is secured by four small screws. Remove the diaphragm while trying not to split it if you want to re-use it. Also, don't lose the spring that sits behind it

14 If your throttle shaft is okay, give all of the parts a thorough clean with either petrol or carb cleaner. The years of accumulated petrol varnish and carbon can be tough to shift. A few stiff bushes and a good soak are needed. Also give all of the jets a soak in petrol to shift any internal deposits

15 A compressed air line comes in very handy to dry the parts and make sure all the internal passageways are free from blockages

16 With everything clean, re-assembly is the reverse of disassembly. Replace any worn parts with the part supplied in your carb rebuild kit



17 Replace the float in its chamber, making sure it is seated properly and then it is time to replace the top cover. Don't forget the gasket!

18 A dab of Loctite on the securing screws for the top cap never goes amiss and will help prevent seizing in future

19 It doesn't look wildly different, but a cleaned and correctly re-assembled carb will help the running of your engine no end

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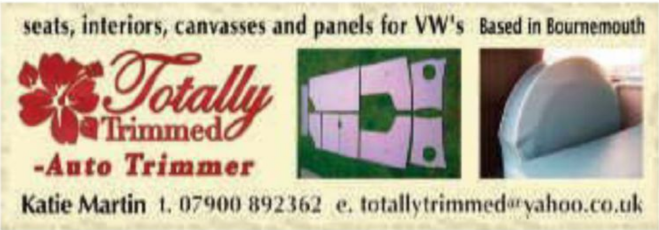
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T5

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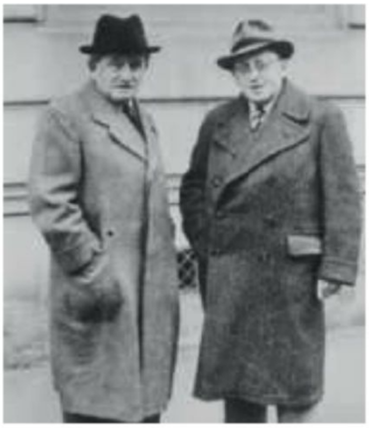
The unsung hero

We all know Ferdinand Porsche created the Beetle, but less well known is Karl Rabe. He translated Porsche's ideas into reality

Words
Richard Gunn

Ferdinand Porsche was a genius. Without his foresight, ingenuity and determination, the Beetle might never have come to fruition, at least not with the very distinctive qualities and character that made it such a success. But every genius needs a support network of similar visionaries for his or her ideas to come true. And, for Porsche, his main man was Karl Rabe.



Karl Rabe (right) with Ferdinand Porsche in 1950. Pic courtesy Porsche

Rabe was the head of design (*Chefkonstrukteur* in German) at Porsche from 1931 to 1965, afterwards staying a consultant for the company until his death in 1968. Whatever wonderful thoughts his boss had, Rabe had to find a way to make them happen. According to Wilhelm Vorwig, the liaison between the Porsche Bureau and the *Reichsverband der Deutschen Automobilindustrie* (*RDA* – the German Motor Car Industry Association) during the birth of the Beetle, "Rabe is actually the man responsible for the finished design. Porsche had the grand idea and the concepts, but it was Rabe who designed a mechanism that worked. Porsche could not have performed without Karl Rabe."

> **"Porsche could not have performed without Karl Rabe"**

Born in October 1895 in Pottendorf in Austria, Rabe joined Austro-Daimler straight after school in 1913. In charge of design there was Ferdinand Porsche, who'd been recruited in 1906. The two were friends and closely collaborative colleagues for the next decade, until Porsche moved to Daimler-Motoren-Gesellschaft in 1923. Rabe then took his vacant top job in the design office. Four years later, he jumped ship to Steyr-Werke where, in 1929, he was reunited with Porsche when he became a board member.

By early 1931, Porsche had founded his own engine and vehicle design and consultancy concern in Stuttgart. Unsurprisingly, one of the first people he headhunted was Rabe, to be his chief designer. It was a leap of faith for Rabe to agree to work at a fledgling firm for a reduced salary, but Porsche inspired that sort of trust and loyalty, and it paid off.

The pair shared aspirations to create a budget car for the masses, elements of which surfaced in their Zündapp and NSU projects during the early 1930s. Then, in January 1934, after discussions with the German government, the Volkswagen project began in earnest. There was a skilled team of Porsche people involved, but second in command was Rabe. His technical skill was much greater than that of Porsche, so he interpreted the notions they both came up with into things that could be built and worked. This position earned the genial gentleman the affectionate nickname of 'Father Rabe' from his engineers.

That we know so much about the Beetle's development is partly down to Rabe, for he kept scrupulous blueprints and diaries. Among the patents in his name used on the Beetle are the articulated differential gears, cylinder heads and several specialist production methods. He was also one of the Porsche Bureau employees who travelled to the USA to buy American machines to equip the Wolfsburg factory. During the Beetle's early days, he was just as involved as Porsche in every aspect of the car but, as an employee rather than the big cheese, his name and true input were less recognised.

Immediately after the Second World War Rabe was one of the skeleton staff who kept the Porsche Bureau going in Gmünd while Ferdinand and his son, Ferry, were imprisoned by the allies. The firm survived by repairing vehicles used by occupying forces and making wheelbarrows and small wagons.

The Porsche family was reunited with its company in 1947 and Rabe went on to be one of those who re-worked the basics of the Beetle into the sportier Porsche 356. His wish to become a partner in Porsche never materialised – although he undoubtedly deserved it – but he stayed on as chief designer. On October 28, 1968, three years after retirement and the day before his 73rd birthday, he died. The Rabe name lingered on in Porsche though. One of his three sons, Heinz, was a personnel manager there for a long period. ■

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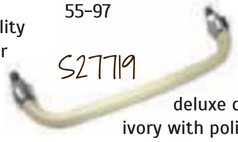
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